UNITED NATIONS
ECONOMIC AND SOCIAL COUNCIL

Distr.
LIMITED

E/ECA/UNCTC/36
8 May 1984

ENGLISH
Original: FRENCH

UNITED NATIONS CENTRE ON
TRANSNATIONAL CORPORATIONS

UNITED NATIONS ECONOMIC
COMMISSION FOR AFRICA

Regional Workshop on the Role of
Transnational Corporations in the
Mining Industry in Africa

Manzini, Swaziland, 2-6 July 1984

LC/NAIROBI

THE ROLE OF TRANSNATIONAL CORPORATIONS IN THE TIN INDUSTRY: CASE OF ZAIRE

A Technical Paper*

* This paper was prepared by a consultant to ECA. The views expressed herein are those of the Author and not necessarily represent the views of the Organization.

TABLE OF CONTENTS

		Paragraphs	Page
INTRODUCTION		1 - 5	1 - 2
	1. Properties and uses of tin	1 - 2	1
	2. Geographic distribution of tin	3 - 5	2
CHAPTER			
I	TIN PRODUCTION: THE WORLD SURVEY	6 - 60	3 - 27
	A. A General survey	6 - 12	3 - 6
	1. Ore beneficiation	7 - 9	3
	2. Smelting and refining	10 - 12	3 - 6
	B. The tin industry in Zaire	13 - 60	7 - 27
	1. Introduction	13	7
	2. Location of deposits and reserves	14 - 15	7
	3. Structure of production	15 - 60	7 - 27
II	STRUCTURE OF THE TIN MARKET	61 - 89	28 - 35
	A. Marketing mechanism	61 - 63	28
	1. Marketing	61 - 63	28
	2. The forces of interference on the market	64 - 67	28 - 29
	3. Tin market prospects	68 - 72	30 - 31
	B. Procurement and price fixing	73 - 89	32 - 36
	1. Procurement	73 - 75	32
	2. London Metal Exchange (L.M.E.)	76 - 83	32 - 34
	3. Commodity exchanges in the United States	84 - 86	34 - 35
	4. The Penang (Pinang) market	87	35
	5. Metal quotations	88 - 89	35 - 36
III	THE ACTION OF THE TRANSNATIONAL CORPORATIONS ON THE MECHANISM OF PRICE CONTROL	90 - 123	37 - 45
	A. Theoretical aspects of market stabilization	94 - 99	37 - 39
	1. The principle of stabilization of an international metal market	94	37 - 38
	2. The means of an international market stabilization policy	95 - 99	38 - 39

TABLE OF CONTENTS (CONT'D)

CHAPTER		Paragraphs	Page
III	B. The stabilization of the tin market or the role of the International Tin Council	100 - 123	39 - 45
	1. The history of the international tin agreements	100 - 103	39 - 40
	2. Objectives of the Tin Agreements .	104 - 112	40 - 42
	3. The mechanism of the Tin Agreements ...	113 - 118	42 - 43
	C. An overall assessment of the Agreements	119 - 123	44 - 45
IV	TRANSNATIONAL CORPORATIONS IN ZAIRE TIN INDUSTRY	124 - 174	46 - 57
	A. Introduction	124 - 125	46
	B. The origin of the Belgian groups	126 - 147	46 - 51
	1. Géomines	126 - 147	46 - 51
	2. From the eastern mining companies to Sominki	148 - 162	51 - 54
	C. The French group	163 - 174	55 - 57
	1. SMDG (Société minière de Goma)	164 - 165	55
	2. SOMIKA (Société minière de Kania)	166 - 172	55 - 56
	3. SOMIDO (Société minière de Katondo) ...	173 - 174	56 - 57
	CONCLUSION	175 - 180	58 - 59
	BIBLIOGRAPHY		60

INTRODUCTION

1. Properties and uses of tin

1. Tin is a silver-white metal. There exist 17 stanniferous minerals, but only two of them, cassiterite (SnO_2) and stannite (Cu_2FeSnS_4) are of commercial importance. The properties of cassiterite - rigidity and inertness - are responsible for the formation of alluvial tin deposits referred to as placers. The placers are usually not located far from the primary deposits. In contrast to this, stannite forms only primary deposits, and it is found in association with a cassiterite-sulphide-type formation.

2. The chief properties of tin are: (a) Fusibility and the capacity to form high-grade alloys, in particular anti-friction alloys as bronzes (copper-tin alloys), Babbitt metals, solders; (b) chemical resistance: resists corrosion well; (c) Plasticity and malleability increase with temperature. Tin can easily be rolled into sheets having a thickness of 0.005 mm; (d) Tin salt combinations are not harmful to man. These different properties explain the use of tin in industry.

Table 1. Tin uses and consumption in industry

Uses	Consumption in %
Tinning	
- tinplate and tinware	43.0
- copper wire)	
- steel wire)	7.0
- others)	
Solder	7.0
Alloys	
- white metal)	
- bronze)	32.0
- others)	
Copper-plated tin	1.0
- tinfoil and plate)	
- metal bellows)	1.0
- tubing, wires and caps)	
Chemical industry and other uses (oxide and tin powder)	10.0
Total consumption	100.00

Source: World Metal Statistics, D.B.L., May 1970, p. 80.

2. Geographic distribution of tin

3. The world's detected tin reserves are estimated in the area of 10 million tons, including 3 million tons of proved and probable reserves. It is estimated that there additionally exist 27 million tons of tin reserves in submarginal, hypothetical and possible deposits. Placer deposits contain over 70 per cent of the total reserves; similarly, 70 per cent of all ore concentrates are produced from placer deposits. Tin placers are essentially located in the tin belt of South-East Asia, Malaysia, Indonesia and Thailand.

4. In Africa, placer deposits are mined in Nigeria, Zaire and Rwanda. It should be pointed out that 90 per cent of the world's tin reserves are situated in developing countries. African reserves are estimated at 0.70 million tons, including 0.3 million representing proved and probable reserves. Zaire's reserves are estimated at 0.2 million tons.

5. The following table shows the distribution of reserves throughout the world:

Table 2. Distribution of world tin ore reserves

Country	Quantity in thousands of tons	Percentage
Australia	370	4.1
Bolivia	1 000	12.4
Brazil	610	7.6
Indonesia	2 400	29.9
Malaysia	830	10.3
Nigeria	280	3.5
Thailand	1 200	14.9
Zaire *	200	2.5
Others *	1 190	14.8
TOTAL	8 040	100.0

Source: Commodity Data Summaries.

* Including the producing countries (Spain, Portugal, United Kingdom and other developing countries). The USSR and China are not included.

CHAPTER I

TIN PRODUCTION: THE WORLD SURVEY

6. Alluvial deposits, or placers, account for 75 per cent of all tin production. This explains the mining methods used. The principal placer deposits are classified as follows: deposits, screes, alluvial deposits, lake and sea shores and deposits covered with fossils.

A. A General Survey

1. Ore beneficiation

7. Ore extraction is for the most part done in quarries, except in the case of primary deposits. After extraction, the ore is beneficiated by concentration and classified into three categories according to content: rich ores contain more than 1 per cent tin; medium ores contain 0.4 to 1 per cent tin and poor ores contain less than 0.4 per cent tin.

8. The dressing of ore derived from placers is done in several successive stages: washing, concentration on tables, and magnetic or electrostatic separation. The final product is cassiterite that is almost pure, containing as much as 75 per cent tin. Ore derived from veins, on the other hand, is crushed and ground, if necessary, in order to be reduced to the sizes that permit maximum recovery. Concentration is done gravimetrically, using the specific gravity of cassiterite.

9. The gravimetric process involves the following stages: screening, grading, jigging and concentration on tables. The concentrate thus obtained generally contains 40 to 60 per cent tin. Whenever sulphurous ores are involved, recource is had to flotation or to magnetic sorting, with or without a grate.

2. Smelting and refining

10. Smelting involves melting the concentrates. Smelting takes place either in electric furnaces or in reverberatory furnaces. The smelting process is a discontinuous one. The furnace charge is generally made up of a certain amount of concentrates, a reducing agent and siliceous fluxing agents. After 10 to 12 hours of smelting, the refined product is poured in the form of slabs. It then undergoes a further fire or electrolytic refining process. Fire refining is more commonly used. It is done in two operations: liquation, boiling and poling. The tin, thus refined, is again poured in small ingots in order to be marketed. Refining yields of product assaying about 99.99 per cent tin. Standard metal tin assays 99.6 to 99.8 per cent tin.

11. In the smelting stage slags very rich in metal are obtained. They have contents ranging from 10 to 25 per cent tin. They are resmelted so as to yield a discardable slag assaying 1 per cent tin.

12. Over the past ten years world tin production has developed as follows:

Table 3. World production of tin concentrates in thousands of tons

Country/year	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Australia	10.0	12.0	10.8	10.5	9.3	10.4	11.7	11.7	12.6	10.4
Bolivia	30.3	32.4	31.2	30.2	32.0	30.3	33.6	30.9	27.8	27.3
Indonesia	19.8	21.8	22.6	25.6	25.3	23.4	25.9	27.4	29.4	32.5
Malaysia	75.4	76.8	72.3	68.1	64.4	63.4	58.7	62.6	63.0	61.4
Nigeria	7.3	6.7	5.8	5.5	4.7	3.7	3.3	2.9	2.8	2.5
Thailand	21.7	22.1	20.9	20.3	16.4	20.5	24.2	30.2	34.0	33.7
Zaire	6.5	6.0	5.4	4.7	4.6	3.9	3.9	3.4	3.3	3.2
Brazil	2.3	2.9	3.7	3.6	4.5	5.5	5.8	6.3	6.6	6.8
United Kingdom	1.8	3.3	3.6	3.2	3.3	3.3	3.9	2.8	2.4	3.0
Others	10.9	10.7	10.6	10.5	10.8	10.5	10.6	11.5	11.2	11.3
Origin not identified	1.9	1.7	2.1	1.4	5.9	4.8	7.7	7.4	7.6	7.0
	187.9	196.4	189.0	183.6	181.2	179.7	188.3	197.1	200.7	199.1

Source: Metal Bulletin Monthly, March 1982.

Table 4. Zaire's production and world production Cassiterite concentrates (in metric tons)

Year	World	Zaire	Percentage
1945		16 000	
1966	166 300	9 832	6.0
1967	172 800	7 111	4.1
1968	183 200	6 264	3.4
1969	178 100	6 647	3.7
1970	185 700	6 458	3.5
1971	187 400	6 440	3.4
1972	196 000	5 960	3.0
1973	188 500	5 422	2.9
1974	183 100	4 675	2.6
1975	180 800	4 574	2.5
1976	179 700	3 950	2.2
1977	188 900	3 900	2.1
1978	197 700	3 450	1.7
1979	201 700	3 300	1.6

Source: op. cit.

Table 5. Profile of world demand for and production of metallic tin from 1971 to 1980 (in thousands of metric tons)

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Primary metal tin production*	185.0	191.4	187.8	181.5	178.5	182.5	179.9	193.5	201.2	201.2
Primary metal tin consumption *	188.5	191.5	214.2	200.1	173.9	194.0	184.8	184.0	183.3	177.4
Gap between production and demand (+ = excess, - : shortage)	- 2.7	+ 3.6	-23.7	-15.4	+ 7.0	- 9.9	- 9.4	- 1.8	+ 3.6	+ 8.6
Stock operations										
Quantity bought	5.4	5.8			19.9					
Quantity sold *			11.5	0.9		19.3	0.8			

Source: op. cit.

* Not including secondary metallic tin or the production of the German Democratic Republic, China or the USSR.

Table 6. Mine capacity and production (1977-1983)

Regions and countries	1977 Capacity 1 000 T	1977 Capacity %	1977 Production 1 000 T	1977 Production %	1983 Capacity 1 000 T	1983 Capacity %
North and South America						
Bolivia	33.0	15.3	32.6	17.1	38.0	14.8
Brazil	8.0	3.7	6.4	3.3	8.0	3.1
Mexico	0.4	0.2	0.3	0.2	0.4	0.2
Other American countries	1.2	0.6	0.9	0.5	1.2	0.5
Europe						
Portugal	0.5	0.2	0.3	0.2	0.5	0.2
Spain	0.7	0.3	0.8	0.4	1.0	0.4
United Kingdom	3.6	1.7	2.9	1.5	3.6	1.4
Other European countries	5.0	2.3	4.0	2.1	4.0	1.6
Africa						
Namibia	1.0	0.5	0.7	0.4	1.0	0.4
Nigeria	6.7	3.1	3.3	1.7	10.0	3.9
Rwanda/Burundi	1.4	0.7	1.3	0.7	2.5	1.0
South Africa	2.8	1.3	2.9	1.5	4.0	1.6
Zaire	6.0	2.8	3.6	1.9	6.0	2.3
Other African countries	1.0	0.5	1.0	0.5	1.0	0.4
Asia						
Burma	1.0	0.5	0.8	0.4	2.0	0.8
Indonesia	26.0	12.1	25.1	13.2	35.0	13.6
Japan	0.9	0.4	0.6	0.3	1.0	0.4
Malaysia	78.0	36.3	58.7	30.9	95.0	36.9
Thailand	25.0	11.6	24.2	12.8	30.0	11.7
Other Asian countries	0.8	0.4	8.6	4.5	1.0	0.4
Oceania						
Australia	12.0	5.6	10.7	5.6	12.0	4.7
TOTAL	214.8	100.0	189.7	100.0	257.2	100.0

Source: E/MJ.

B. The tin industry in Zaire

1. Introduction

13. Tin mining in Zaire is carried on in three distinct regions or geographic zones with different types of deposits and mining methods. This is more or less the logic that was followed in the granting of mining concessions. These have been assigned to three groups of corporations, which today account for nearly all of the country's tin production. These companies are: Gécamines, in the south of the Shaba Plateau region (Busanga area), Zairétain in the north of the Shaba region (Manono and Muanza), and Sominki in the Kivu region. At the present time only Sominki (80 per cent) and Zairétain (20 per cent) are producing tin in concentrates and molten tin. Gécamines, which is the successor of Union Minière du Haut Katanga, no longer mines tin, but still holds its concession. To these traditional corporations there have been added other groups, such as B.R.G.M. (Bureau des Recherches géologiques et minières de France) through its subsidiary SEREMI and EMZA (Entreprise minière du Zaire), a corporation owned by a group of Zairian shareholders.

2. Location of deposits and reserves

14. The principal tin deposits are located in the Kivu area and in the northern Shaba area. Intensive prospecting has been carried out on them. Recognized deposits in Shaba are those of Mitwaba, Bukama, Mukoy, Punda Biabo, Muika, Kiambi, Mandwe and Kibara. These deposits are associated with granite. The tin and columbotantalite deposites at Muanza, Malemba and Manono-Kitololo are associated with pegmatites found in the Kibara formation.

15. The reserves of the Manono deposit alone are estimated at 165 000 tons of tin and 30 million tons of spodumene containing 6 per cent lithium oxide; the tin content of the ore ranges from 0.08 to 0.02 per cent per ton. In Kivu one finds deposits of tin associated with low-content wolfarm ore at Etabu and Lentukulu, while it is associated with columbotantalite at Bishasha. The bulk of the exploitable depostis are located around the Kalima area, in the subregion of Maniema.

3. Structure of production

16. At the present time production is carried on by two groups or two companies in which the State of Zaire holds shares. Within a few years two* other companies will also start producing cassiterite in Zaire, but the first two groups will still remain the major producers for a long time.

---

* This involves two deposits (Kania and Katondo) which will be mined by Seremi (subsidiary of B.R.G.M.) and EMZA, which will resume mining in the Mitwaba area.

(a) SOMINKI (Société Minière Zairoise et Industrielle du Kivu)

(i) General remarks

17. Sominki is a mixed corporation whose stock is owned 34 per cent by the State of Zaire and 66 per cent by the Cogemin group, of Belgian origin. The latter group is a merger of several partners that had mined cassiterite and the metals associated with it in Kivu, under a variety of names. The most important partners in this group are: the Empain group, Banque Bruxelles Lambert, La Banque de Paris et des Pays-Bas, and Forminière. The Sominki corporation has been in existence for only a short time. The ordinance creating it is dated 13 February 1976. This creation was in fact a merger of older companies that had carried on activities in the region. These companies were Cobelmin, Symétain, Kivumines and Phibraki. Sominki's chief customers are: the State of Zaire, as relates to gold, and foundries located in Belgium, Germany and Switzerland.

18. Cobelmin was a Belgian mining company that managed mining operations on behalf of financial groups. The most important financial group for which it worked was the Empain group and forminière. While Symétain, a mining syndicate, was supported by the Bruxelles Lambert bank, Kivumines was the technical manifestation of the Comité National du Kivu, whose history merges with those of the granting power of the Comité des Grands Lacs. Cobelmin, which had already absorbed a goodly number of other mining companies in the region, entered, via its principals, into agreements with Symétain and G.M.G.L. in order to arrive at a merger and the creation of Sominki. The latter is a Zairian limited liability company having its main office in Kalima, the former headquarters of Symétain. The corporate capital is Z 6 000 000, represented by 300 000 shares of stock, with the State of Zaire holding 84 038 shares. For the moment, the company seems to be in a state of flux: the partners would like to give it some new blood through a new organization and perhaps through a new investment effort. At present it produces and markets the following mineral substances: Cassiterite: tin ore; Columbotantalite: tantalum and niobium ore; Wolframite: tungsten ore; Monazite: rare earths containing thorium and europium; gold.

19. After the nineteen sixties all these companies experienced enormous difficulties, not unrelated to the political situation reigning in the geographic space in which their activities unfolded.

Over the years production has developed in the following manner:

Table 7. Developments in tin ore production in recent years

Substances		1976	1977	1978	1979	1980	1981
Cassiterite	T	4 638 061	4 052 150	3 490 150	2 856 540	2 593	2 635
Growth	%		-12.63	-13.90	-18.15	-9.23	+1.62
Wolframite	T	442 500	317 200	275 500	210 060	134	88 690
Growth	%		-28.31	-12.9	-23.78	-36.21	-33.89
Columbo-tantalite	T	53 125	80 910	47 975	48 000	72.0	44 293
Growth	%		+52.30	-40.70	+0.05	+ 50	-33.48
Monazite	T	124 860	96 410	79 420	90 420	51.0	35 240
Growth	%		-22.79	-17.70	+13.85	-43.59	-30.90
Gold	Kg.	654 057	552 924	471 542	476 431	548	586 477
Growth	%		-15.46	-14.10	+1.93	-15.02	+ 7.02

20. The table shows a continual decline in cassiterite and wolframite production. In contrast to this, gold and columbotantalite ore production has been on the rise, except for the year 1981, during which tin showed growth while columbotantalite showed a reduction.

21. Mining operations can be grouped into four major divisions, distributed as follows: Northern Division, with Punia as its headquarters; Eastern Division, the headquarters of which is Kamituga; Central Division, with Kalima as headquarters, being at the same time the headquarters of the General Management; and the Western Division. Generally speaking, mining is done in quarries, where the ore is extracted by monitor. In the Central Division there exists a primary

deposit at Isongo and one at Nakenge. The first will go into operation in 1983. Its reserves are estimated at 400 tons of tin content. Following the exhaustion of the former placers, the tailings of old mining sites are being exploited.

22. Extracted ore is crushed right at the site. Ores that have reached the release mesh are swept into the sluices by a jet of water. At the end of the sluice is located a battery of jigs. Jig concentrates are sufficiently rich and they assay approximately 90 per cent cassiterite. The concentrates are brought to the plant, where they are dried in charcoal furnaces. After drying, they undergo magnetic separation. Due to the fact that cassiterite is not magnetic, it passes, whereas columbotantalite, wolframite and monazite are held. By this method the cassiterite is purified. It is barrelled. In this form it can be marketed or supplied to smelters.

23. Columbotantalite and wolframite have approxiately the same magnetic susceptibility. It is therefore difficult to separate them if they happen to be present in the same concentrates. Fortunately for those working with the ores, they come from different deposits. Each type of ore separately undergoes its purification process.

24. Monazite, on the other hand, exhibits a difference in magnetic susceptibility and can thus be separated from other ores by differentiation of the magnetic intensity. It should be mentioned that monazite from the Punia region contains 0.4 per cent of the rare earth europium, which has its application in the colouring of colour-television cathode ray tubes. Monazite derived from other deposits, on the other hand, contains thorium. When the ore from the Central Division is processed, a sizeable amount of ilmenite is recovered, but it is not utilized owing to the remoteness of the mine location from operating facilities. Indeed, the cost of transportation would exceed the market value of the product. It is therefore rejected. The product exported by Sominki is a cassiterite concentrate containing 90 per cent cassiterite, but with a tin content of 75 per cent.

(11) Economic data

25. As regards exporting that follows the normal course, it should be pointed out that traffic is slow and there is sometimes a certain degree of complete tie-up. This forces the Company to resort periodically to transporting its products by air, so as to resolve cash-flow problems within a respectable period of time,

in spite of the high cost of this means of transport. The tonnage exported over the past two years breaks down as follows:

	1981	1980
Cassiterite (in metric tons)	2 653 500	2 924 250
Wolframite (in metric tons)	131 250	158 250
Columbotantalite (in metric tons)	66 390	78 390
Monazite (in metric tons)	54 000	85 400

26. Exports were down in 1981 with respect to the year 1980. This reduction of exports has not affected the Company's funds due to the fact that tin prices rose steadily until the end of December. These favourable prices are explained by the support (which is artificial and difficult to sustain in the long run) contributed by the South-East Asian producers, who made purchases in order to decrease the offer on the market. Concentrates are shipped out of Zaire's borders by several routes: Through the interior: i.e., from Kindu by river to Lubundu, and from there by railway to Kisangani; from Kisangani by boat, on the Zaire River, to Kinshasa; and from Kinshasa to Matadi by rail. At Matadi the concentrates are directly taken over by the buyer, for the products are sold FOB; Via Dar-es-Salaam; Via Goma (the products are expedited by air). This essentially relates to gold. Concentrates are shipped to various countries.

Production for the year 1980 showed the following distribution by country:

G.F.R.	Cassiterite	1 071 000 T
	Wolframite	10 500 T
Switzerland	Cassiterite	1 351 000 T
	Wolframite	158 250 T
	Coltan	63 000 T
	Monazite	64 800
Belgium	Gold	435 247 Kg.

Based on destinations and ports of lading, the products showed the following values (1980):

Table 3. Value of products according to their destinations and places of embarcation

	Quantity	FOB values
(a) Port of lading or airport		
MATADI		
Cassiterite	2 533 000 T	59 156 [illegible] Z
Wolframite	105 750 T	1 951 [illegible] Z
Coltan	10 000 T	2 590 [illegible] Z
Monazite	32 400 T	51 [illegible] Z
DAR-ES-SALAAM		
Cassitérite	339 000 T	7 410 [illegible] Z
Wolframite	53 000 T	[illegible] Z
Coltan	45 000 T	3 170 [illegible] Z
Monazite	32 000 T	[illegible] Z
GOMA		
Gold bars	435 247 Kg	13 [illegible] Z
(b) According to country of destination		
G.F.R.		
Cassiterite	1 071 000 T	23 [illegible] Z
Wolframite	10 500 T	[illegible] Z
SWITZERLAND		
Cassiterite	1 851 000 T	42 [illegible] Z
Wolframite	150 250	[illegible] Z
Coltan	[illegible] 000 T	[illegible] Z
Monazite	[illegible] 000 T	[illegible] Z
BELGIUM		
Gold bars	435 247 Kg	13 [illegible] Z
Receipts - FOB		
Cassiterite	2 922 000 T	[illegible] Z
Wolframite	150 750 T	2 [illegible] Z
Coltan	[illegible] 000 T	[illegible] Z
Monazite	[illegible] 000 T	[illegible] Z
Gold bars	435 247 Kg	13 [illegible] Z
	TOTAL	[illegible] Z

27. In spite of the difficulties experienced by the Company in successfully mining its deposits and providing for the exportation of its products, operating costs per ton of cassiterite are sufficiently acceptable, for they still ensure a fairly sizeable margin of profit. All costs taken together, the average cost of a ton of cassiterite comes to Z 32 333.07, or US$ 5 800. A ton of metal tin thus comes to approximately US$ 7 500, while the posted price on the London Metal Exchange is US$ 13 000.

28. The items increasing operating costs the most are: (a) labour (b) consumable goods, namely:

- mining and operating materials
- replacement parts
- transport costs, which are always on the rise; (c) the increased value of tied-up funds owing to defective public transport; and (d) fuel.

Table 9. Labour (in current Zaires)

	NATIONALS	AFRICANS	NON-AFRICAN EXPATRIATES	TOTAL
MANAGERIAL	2 086 647	-	6 677 239	8 763 886
FOREMEN	1 408 669	-	9 664 425	11 073 094
WORKERS	18 586 441	-	-	18 586 441
TOTAL	22 081 757	-	16 341 664	38 423 421

Consumable materials at value (including equipment and tools)

	Value in Z
Electricity and water	55 950
Fuel and lubricants	4 950 358
Gas	-
Wood	-
Coal	951 126
Coke	-
Explosives	-
Equipment and tools	770 642
Materials and parts	9 048 319
Printed material and office supplies	592 788
Total	16 369 183

29. Given under table 10 are the costs of the different activities throughout the year 1980.

These costs include labour and consumables.

Table 10. Cost by activity for 1980

Geology	2 540 355
Extraction	35 674 475
Concentration	1 400 379
Metallurgy	314 700
Maintenance	5 091 256
Transportation	11 590 503
Marketing	-
Social activities	658 713
	57 270 381
Work done for the Company for itself	7 564 679
TOTAL	64 835 060

Table 11. Receipts and contribution to the Public Treasury

	1979	1980	1981	1982(e)
Gross receipts (in Zaires)	35 675 330*			129 893 000
Selling costs	1 056 774			
Net receipts	34 618 556			
Gross profit before taxes		38 232 784	20 776 299	
Appropriation to reserve for reconstitution of deposit		10 500 000	9 750 000	
Allocation to Sominki Foundation		1 000 000	1 000 000	

(e) Estimated

* Receipts derived exclusively from cassiterite.

Table 11. Receipts and contribution to the Public Treasury (cont'd)

	1979	1980	1981	1982
Distributable balance		13 458 478	10 541 627	
- Profits tax to the State		13 366 392	10 383 149	
- State dividends		3 597 572	941 339	
- Payroll tax		6 061 285	7 643 788	
- Statistics tax		623 819	882 580	
- Miscellaneous taxes		165 047	2 244 597	
Total paid to the State		23 914 215	24 095 452	

(e) Estimated

* Receipts derived exclusively from cassiterite.

Value Added: For the year 1980 the value added amounted to 82 694 571 zaires.

Export receipts derived from cassiterite: Over the years, receipts from exportation on cassiterite alone have shown the following profile:

	1974	1975	1976	1977	1978	1979	1980
Value in thousands of Z	10 865	7 819	15 701	23 117	23 677	32 423	66 577

30. Over against the receipts for the year 1980 there were imports in foreign exchange by Sominki of the order of 166 333 076 Belgian francs, or Z + 16 833 308. In other words, one quarter of the total receipts in foreign exchange served for the importation of goods for the Comapny.

31. If one considers the total turnover of the Company, the amount used for paying for the Company's imports was one-sixth.

Sominki investments in 1980 (in Z)

		1980
1)	Expenditures on depreciable geologic searches	14 830 924
2)	Amount of reserve for reconstitution of deposits	10 500 000
3)	Total investments during the year	4 448 641
4)	Reconstitution of deposit	3 365 785

Manpower: Manpower showed the following pattern during the past three years: (for each year, the figure is ruled off at 31 December).

	31/12/79	31/12/80	31/12/81
Expatriate employees	110	103	110
Local management staff	30	53	71
Local foremen	110	212	194
Zairian workers	15 951	14 208	14 611
TOTAL	16 201	15 272	14 986

Residual value and value exported in 1980

	Values in Zaires	%
Total export receipts in convertible zaires	98 020 906	100
Receipts on cassiterite	66 576 853	67.92
Amount paid to public treasury	23 914 215	24.40
Import expenditures in foreign exchange	16 833 308	17.17
Social expenses	658 713	0.67
Investments	4 448 641	4.54
Zairian labour (payroll)	22 081 757	22.53
Residual value within the country	51 103 326	52.14

* To this figure one must add nearly 50 per cent of the earnings of expatriates, spent in Zaire, i.e.: Z 8 170 832. This gives the following value: 59 274 158 zaires, or 60.47 per cent.

Exported value: The breakdown of the exported value is as follows:

	Value in zaires	Percentage
Dividends to foreign shareholders	9 502 200	9.68
Imports	16 833 300	17.17
Expatriate wages paid outside of the country	8 170 832	8.34
TOTAL	34 506 458	35.20

32. Out of the Company's receipts, 60 per cent remain within the country in various forms, while more than 35 per cent are transferred out of the country. An analysis of these tables reveals the following facts: The receipts distributed to Zairians in the form of wages amount to some 122.68 zaires per person per month, or 1 472.12 zaires per person per year, which comes to US$ 6 and US$ 73, respectively. The amount paid does not enable the receipient to buy a suit of clothes after 12 months of service, assuming that he keeps all his money without spending it.

33. In contrast to this, the remuneration received by the average expatriate is of the order of 13 221.41 zaires per month, or 158 656.93 zaires per year, which amounts to 1 586 569.00 Belgian francs or the value of an apartment in Belgium. The upshot is that after three years of service the expatriate can buy himself an apartment in his own country or start up some economic activity, whereas his Zairian counterpart is unable to save even Z 100 or the equivalent of US$ 5 on the black market, i.e., the value of a bag of cement.

34. The amounts allocated for investments are too low, being the equivalent, in value, of a house in Kinshasa. The yearly social charges for the entire Zairian personnel equal the yearly pay of four expatriates. At the same time, the State of Zaire receives slightly more than the total expatriate payroll. If one considers the portion collected directly by the State of Zaire and Zairians working in the company, it is in the area of 45 995 972 zaires, while the foreign partners collect 42 677 300 zaires. As stated above, personnel payroll costs constitute the heaviest factor in export cost.

35. The cost of personnel took the following shape in 1982: - a worker costs approximately Z 11/day (eleven zaires per day, i.e., US 1.80 at the official rate, or US$ 0.50 on the illegal market); - a foreman costs Z 60/day, i.e., US$ 11.00 on the official market, or US$ 3.00 on the unofficial market; - a managerial employee, Z 220/day, i.e., US$ 54.00 on the official market, or US$ 14.50 on the black market; - an expatriate employee, Z 944/day, or US $ 171.60 (zaires paid to expatriate workers are convertible into dollars at the

official market rate). A rough calculation shows that for 1982, the 110 foreign employees cost 103 840 zaires per day, or US$ 18 889.09, while all the Zairian employees together cost 175 990 zaires, or US$ 3 199.59 on the illegal market. In other words, the 110 expatriate employees cost twice as much as all the 14 876 Zairian employees put together.

36. The Company explains this imbalance by the difficulties that it experiences in hiring qualified personnel. Independently of the dearth of the local market in terms of qualified Zairian personnel, the Company considers itself penalized by its enclaved geographic location, far from all of the country's major centres where the few competent managerial-level people are to be found. In order to palliate these difficulties, the Company is setting up a dynamic policy for strengthening Zairian personnel qualifiecations, which ought ultimately to make it possible to cut down the recourse to expatriate personnel, which is too costly.

37. It should be pointed out that the wages of a highly skilled worker break down as follows: Z 150 basic wage; Z 85 production bonus if the worker is in the production department; Z 75 transportation bonus i.e., total gross wages of Z 310, or US$ 15.50. The worker also has the benefit of free housing at the workers' camp and free medical care. A Zairian engineer graduating from an institute of higher learning and starting his career in the Company receives a total gross salary of 1 900 zaires (i.e., US$ 95). He is further given free lodging and also has the advantage of free medical care.

(iii) The Company's prospects

38. Sominki, as mentioned above, is a merger of several companies that have been mining cassiterite in this region since the 1930's. As happens everywhere, the first operators pounced on the rich, easy-to-mine deposits. After half a century of exploitation the easy deposits have disappeared and have been almost totally depleted. Moreover, it was after they began to experience difficulties that the different groups which today make up Sominki banded together to form a single company.

39. This partnership has not permitted an upsurge of production - quite the contrary. Since the merger took place, production has done nothing but decline. Today it has reached the production volume of the same groups in 1932, or in other words, two years after cassiterite began to be exploited in the region. We should note, however, that production began to fall off as of 1955. Excessively low production costs, due to the low cost of labour, still enable the Company to make profits, i.e., just enough to pay back investment capital, despite the fact that the very obsolete plants have already been depreciated.

40. The Company is forced to discover new deposits or to start mining primary deposits. Operating on the latter requires sizeable investments. None of the partners appear to be willing to put up the requisite capital. Owing to the

economic situation prevailing in it, the Zairian State is not in a position to bring together the necessary sums, and still less is anyone able to lend them to it. As far as Cogemin is concerned, it appears to be following a wait-and-see policy in order to see how the situation in Zaire will develop, and, all things considered, it is fairly well remunerated with the Company operating as it is presently.

41. Reinvestment of profits is too low in order for the effects of it to be felt. The greater and greater deterioration of the transport infrastructure, which it is up to the State to maintain, will ultimately prevent the Company from carrying its business normally. The freeing-up of mining for gold and other precious metals will deprive Sominki of a considerable percentage of its active workers, who prefer mining and selling gold over a life of hard and poorly paid work on the workings. In addition to desertion by workers, the abandon of agriculture by peasants who are also involved in gold mining will lead to famine in the area. Thus, the company will find it more difficult to supply its workers and officials with food. The combination of several factors is likely to create, in the long run, harsh working conditions and jeopardize the profitability of the company's activities.

(b) ZAIRETAIN (Société Zairoise d'exploitation d'etain - Zaire Tin Mining Company)

- Company's name: ZAIRETAIN SARL - 1919.
  Ownership: mixed - 50 % State
  50 % Géomines

Equity capital:	Zaires 500 000.
Turnover:	1979, Z. 7 925 197
	1979, Z.10 447 361.
Head Office:	Kinshasa 3, av. de la Mongala B.P. 510.

42. Zairetain, besides producing tin, a metal obtained from cassiterite, also produces and markets colombo tantalite and tantaliferous dross. Geomines, the State's partner in Zairetain, is a Belgian group operating in several fields; it also mines tin in Rwanda in partnership with the Government.

(i) Reserves, mining and production

43. Zairetain is involved in the working of 7 quarries of which 4 are entirely mechanized, 1 hydraulically worked, 1 manually and 1 on a small scale.

44. The stanniferous resources in still only partially known unweathered pegmatite can be estimated as follows:

Table 12: Estimates of Zairetain's ore reserves

KITOTOLO

	m^3 of ore	Content (kg/m^3)	Cassiterite tonnage (metric tons)
1. Proved reserves	11 300 000	2.0	22 500
2. Probable reserves	31 950 000	1.8	57 100
3. Possible reserves	5 100 000	1.9	9 700
Kitotolo total	48 350 000	1.85	89 400

MANONO

The probable reserves of the eastern part of the deposit (Manono Sector) have been calculated as follows:

	m^3 of ore	Content (kg/m^3)	Cassiterite tonnage (metric tons)
Probable and possible reserves	85 800 000	1.6	137 000
Total Kitotolo + Manono	134 150 000	1.68	226 400

45. The Manono deposit is located at the intersection of the 27° East meridian and the 7°20' South parallel, in the angle formed by the Lualaba (45 km west of Manono) and the Luvua (30 km to the north). The known primary deposit consists of two dykes of pegmatite both having appreciably the same dimensions: 5 km in length, while the width ranges from 50 to 800 metres, with a mean of 400 metres. There is a pegmatite outcropping covering an area of 1 200 000 square metres at Manono and 1 300 000 square metres at Kototolo. Between the two lenses there is a strip 2.5 km in length through which the valley of the Lukushi passes, which is not adequately known.

46. To the north of the two dykes there appear a certain number of pegmatite lenses of various sizes, surrounded by mica schist. It is not yet possible to determine whether these are separate lenses or apical outcrops arising from the same pegmatitic mass. A detrital deposit has formed to the north of the dykes and covers the mica schist. These eluvia average 8 metres in thickness. Laterization has taken place there to a greater or lesser extent, forming either lateritic sand or friable laterites, or even hard laterites. The unweathered pegmatites

thus represent an exceptional reserve of more than 200 000 tons of cassiterite. With these reserves, Manono constitutes one of the most important tin-bearing deposits in the world. To these unweathered pegmatite reserves there must be added the partially explored detrital resources in the area surrounding the Manono primary deposit. They involve pegmatitic eluvia and laterites.

47. Up to the present time approximately 13 000 tons of cassiterite have been recorded there. The size of the detrital resources may be increased considerably, and Zairetain includes in its programme the prospecting of eluvia and laterites over a wide area, astride the Manono primary deposit. Out of the 13 000 tons inventoried, however, the exploitable reserve is estimated at 6 000 tons. This is insufficient. Going hand in hand with laterite and eluvium prospecting, Zairetain is planning to take up the tailings and the sand in the decantation basins, using new techniques, in order to recover the accummulated losses. The reserves contained in the dumps and decantation basins represent several tens of millions of cubic metres of material with a content that is low but recoverable, with acceptable yields, through the use of new equipment for processing fines.

48. Zairetain works its deposits in several ways. The different methods appear side by side as totally mechanized operations (these cover 75 per cent of production), hydraulic mining operations (1 per cent), manual mining, by simple recovery (17 per cent), and operation by independent artisans (6 per cent). The mechanized facilities were designed for mining weathered pegmatite. This can now be deemed finished, The Company has to take up the mining of the hard ore of the primary deposit. Processing the primary deposit involves higher consumption of materials and parts, thus drawing upon the services of a procurement department that is already at grips with cash-flow and foreign-exchange problems. The Company is trying to go back over the tailings of its earlier operations. It is also turning in the direction of dredging the river beds in the region.

49. The process of beneficiating cassiterite is a gravimetric one. When what is involved is weathered ore, generally containing 0.03 to 0.8 per cent tin in the form of recoverable cassiterite, concentration is done solely by gravity. The cassiterite concentrates derived in this way assay 60 to 70 per cent tin. As for unweathered ore, it is necessary to pass through a preliminary step, involving release from the recovery mesh by crushing. The products of crushing are subjected to treatment by gravity through the successive use of jigs and converting tables.

50. From the concentrates assaying 70 per cent tin, columbotantalite is extracted by means of electromagnetic separation. The products thus purified are smelted at Manono. Zaïretain exports: (a) a standard metal, i.e., containing 99.85 per cent Sn; (b) a columbotantalite concentrate containing 65 per cent combined niobium-and-tantalum oxide; and (c) tantaliferous slag containing 18-20 per cent niobium-and-tantalum oxide. The Company retreats the slag from the furnaces several times, discarding it only when it no longer contains any more than 1 per cent tin.

51. The Manono foundry includes two electric arc furnaces. In the first furnace, which has a rated capacity of 1 000 KVA, through the reduction smelting of cassiterite one obtains a sort of tin matte, while at the same time rich slags are formed (20 to 25 per cent tin). In a second stage, in a second furnace having an 800 KVA rating, this rich slag is remelted in order to form poor slag (containing less than 2 per cent tin) and hard rock containing 60 to 65 per cent tin and iron. The latter product is recycled during the smelting of cassiterite. The metal extracted during the first stage of the process is refined by fractional liquation in hearth furnaces (it is rid of impurities such as arsenic, lead, iron, etc.). The refined metal is poured in 32 kg ingots. The foundry's efficiency is 89 per cent. It was set up for the production of 9 000 tons of cassiterite per year. With the drop in production, the efficiency is declining, owing to the small size of the circulating load.

Profile of production in metric tons

	1968	1975	1976	1977	1978	1979	1980
Cassiterite	2 492	956	680	1 034	899	608	507
Tin	1 922	648	478	663	496	458	216
Columbotantalite	80	30	25	30	35	10	10
Tantalum-bearing slag					211.0	100	100

52. The table of production shows a continuous drop in production over many years. The foundry is operating below capacity. In 1980, the amount of tin smelted was 216 tons instead of the installed capacity of 9 000 tons. The difference clearly evinces the degree to which the general situation of the Company has deteriorated. Yet the Company holds sizeable reserves and has an energy infrastructure that would certainly have made it possible to produce more. But difficulties of various orders hinder the smooth running of the enterprise.

(ii) Infrastructure

- Energy

53. The Company has its own hydroelectric plant located at Piana Muanga (90 km. from Manono), with a capacity of 35 000 KVA. At present this capacity is beyond the needs of the Company. The plant has been amortized since, and the cost of energy is excessively low.

- Technical facilities

54. Zairetain owns its own foundry, which is the only one in Zaire at this time. The present processing capacity is 9 000 tons of cassiterite (6 500 to 7 000 tons of tin per year). Well-equipped shops give the Company a certain degree of autonomy. In them a considerable number of parts can be manufactured and almost all the members of the machines used in mining can be repaired.

- Personnel

	1978	1979	1980
Labour	2 524	2 465	2 416
Foremen (Zairians)	44	47	41
Management staff (Zairians)	18	19	17
Expatriates:			
- Foremen	16	14	17
- Management staff	2	5	6
Total	2 604	2 550	2 497

(iii) Economic data

55. From 1978 until 1980, the breakdown of the cost price was as follows (in current zaires):

Table 13. Cost price (in current zaires)

	1978	1979	1980
Labour in zaires	607 814.97	1 402 570.35	2 958 189.36
Products consumed	422 213.66	1 532 079.63	1 072 584.63
Miscellaneous	1 122 796.43	209 155.79	614 224.16
Subtotal	2 152 825.06	3 403 806.37	4 642 998.75
Administrative costs, overhead, finance charges, transportation, taxes, duties and miscellaneous charges	5 494 785.11	7 706 200.77	8 761 229.42
Total	7 647 610.17	11 110 007.14	13 404 228.17
Cost of cassiterite per ton	8 431.49	17 275.20	25 427.30
Smelting costs	66 844.17	314 458.48	111 630.77
General expenses	4 570 970.51	12 514 215.93	9 506 796.98
Cost of tin per ton	9 554.40	23 211.60	44 967.53
FOB cost per ton of tin	9 628.13	28 260.97	45 107.59

Transportation costs within the Republic of Zaire developed as follows (in zaires per ton).

	1978	1979	1980
From Manono - Muyunba - Matadi		1 519.20	
From Manono - Muyumba - Kalemi	73.73	73.73	
From Manono - Lumumbashi			1 450

56. The normal exit routes are: Manono to Muyumba - Kalemi, Dar-es-Salaam; Manono Muyumba to Matadi; Manono to Muyumba - Dilolo - Lobito. Due to the fact that tin is sold at FOB prices, the most advantage transportation is via Dar-es-Salaam. Difficulties of removing goods along this route, however, often render it necessary to pass via the costly Matadi route. Even air transport has been used at certain times.

57. Contributions to the Treasury are the result of various taxes and duties which the Company owes to the State. The various taxes and duties are as follows:

Table 14. Various taxes of Zairetain

	1978	1979	1980
Export tax			
- Export duties	None	None	None
- Statistical tax	92 018.18	22 622.98	49 778.57
- Sales tax (turnover tax)	None	None	None
Import tax			
- Import duties	"	"	"
- Fiscal duty	"	"	"
- Statistical tax	"	"	"
- Turnover tax collected by Customs	"	"	"
Other impositions			
- Professional tax (on results)	"	"	"
- Tax on income from securities (dividend distributed)	"	"	"
- Exceptional tax (remuneration of expatriate personnel)	30 907.68	46 872.27	82 981.50
- Other contributions	25 339.11	38 098.80	73 714.12
- Turnover tax on conventional transfers	416 949.95	384 286.38	570 770.82
Total	566 105.78	491 880.43	777 245.11

58. Exports do not always coincide with production. Thus, the value of export receipts differs from the value of production. In order to apprehend the meaning of the contribution made by Zairetain to the public treasury, it would be well to compare it to total revenue derived from exports.

Table 15. Zairetain's contribution to the Treasury

	1978	1979	1980
FOB unit value* in zaires	9 542.11	24 671.85	45 108.59
(1) Tin (2) Columbotantalite (3) Tantalum-bearing slag	156.56	18 888.60	79 103.97
Total FOB values in zaires	53.50	1 727.59	5 583.21
(1) Tin	5 250 059.38	6 981 615.44	9 638 442.71
(2) Columbotantalite	5 479.43	283 329.00	791 039.71
(3) Tantalum-bearing slag	11 294.19	1 972 758.84	568 320.88
Total	5 266 833.00	7 437 703.28	109 978.030.30
Contribution to the Treasury	566 105.78	491 880.43	777 245.11
Percentage	10.75	6.61	7.07

* The values given by Zairetain's annual report appear to me to be erroneous.

59. Zairetain's products are marketed outside of the Republic of Zaire by Société Générale des minerais de Belgique (S.G.M.). Receipts are paid into Zairetain's account, and Zairetain is accountable for them to the Banque du Zaire. A foreign-exchange allocation system set up by the Government of Zaire gives the Government the right to dispose of all receipts in foreign exchange derived from the sale of export products. A portion of them is made available to the producing Company, in order to enable it to purchase the capital goods required for its operation on foreign markets, while the remaining portion is given as the equivalent in zaires. The foreign-exchange portion received by the enterprise amounts to approximately 30 per cent of its total receipts. As can be seen from the size of the portion collected by the State, Zairetain contributes very little to the public treasury.

(iv) Prospects and difficulties of the Comapny

60. The production of the Zairetain Company has been regressing for a certain time. The cause of this are mainfold:

(a) The gradual depletion of the surface deposit requires a sizeable investment for the purpose of carrying out new prospecting and switching to mining of the primary deposit, the reserves of which are quite large.

(b) The obsoleteness of the equipment, owing to rational non-depreciation and failure to renew the machines at the appropriate time.

(c) The narrow profits resulting from the decrease in production and the increase in operating costs have prevented the Company from having a healthy cash-flow situation in order to ensure better operation.

(d) The two partners (Géominas and the Zairian State) have not shown any real desire to put the Company back on a sound footing. The situation has deteriorated over the years, and at this point the degree of deterioration requires considerable capital in order to save the company.

(e) One consequence of this lack of will has been the absence of any rational programme of operation.

(f) Procurement difficulties have further contributed to the Company's poor performance.

(g) The decreased output of labour, somewhat discouraged by uncertain prospects and by low income, has intensified the Company's difficulties still further.

(h) New operating methods are contemplated, but the Company's fundamental problem is to find the necessary funds for attacking the rich primary deposits existing on its concession, for at the current selling prices of cassiterite, mining the hard rock is still economically feasible.

CHAPTER II

STRUCTURE OF THE TIN MARKET

A. Marketing mechanism

1. Marketing

(a) Tin metal

61. The marketing of tin has two sides to it, depending upon whether one is dealing with metallic tin or concentrates: In the case of tin in metal form, the most significant markets for the developing countries are actually the terminals of the Penang market, the London Metal Exchange, and the New York Market. The physical volume of metal passing through Penang is greater than anywhere else in the world, whereas London, through the London Metal Exchange, is the location where the price is determined. The London price is often higher than the Penang price, due to the fact that it takes freight into account.

(b) Concentrates

62. In the case of concentrates, sales are based on long-term contracts between producers and smelters. Among the countries that sell concentrates one should mention Bolivia and Zaire. For these countries, the contracts in question are of appreciable importance, albeit in the case of Bolivia one can expect an increasing drop in concentrate exports during the coming years, due to new foundry projects.

63. The supplying of concentrates to foreign smelters is based on contracts similar to those involving other non-ferrous metals. Payment is made after delivery to the foundries, the base price being determined by the quotations on the London or New York markets. Contracts obviously specify concentrate characteristics, such as minimum tin content and acceptable impurity level.

2. The forces of interference on the market

64. The tin market is governed by a juxtaposition of different forces. If one considers the forces normally acting on a metal market, one must add the interference of the following additional forces: (a) The play of the international tin agreements. These are characterized by the existence of a regulating stock and by export control mechanisms. This force has made it possible to maintain the floor price of the metal for more than twenty years, with the exception of a two-week period in 1958. Despite successive increases in the ceiling price, the market price long remained. (b) The strategic stock of the United States. The non-periodic use of this stock frequently affects the tin market. The attached table gives the detailed evolution of tin prices on the London and New York Markets. (c) The expenses and costs of smelting facilities in the face of the energy crisis. Since the energy crisis, Belgian, British and American foundries and refineries have experienced a rise in costs; similarly, the cost of foundry installations located in developing countries has become almost prohibitive. The increase in expenses showed the following pattern: US$ 0.24 per pound in 1974; US$ 0.48 per pound in 1977 and US$ 0.60 per pound in 1978. These expenses include transport

costs from the developing countries to Europe or to the North American markets. This latter force, added to the tin market, does not tend to favour the creation or the expansion of facilities in the developing countries in addition to the projects being carried out in Bolivia, and one must not forget the African projects in Rwanda and in Zaire. (d) Ownership of extraction and processing facilities by the Governments of developing countries.

65. A further factor on the tin market, in contrast to the situation with other metals, is the fact that the tin mining and treatment facilities belong in large measure to the Governments of developing countries. They are run by State-owned enterprises. Bolivia nationalized its tin industry as early as 1952, despite the fact that it still continued recently to export concentrates. Indonesia established the first integrated government-owned enterprise in a developing country when it nationalized tin activities on Belitung (Billiton) in 1957. At present it produces metal itself, for the consumer markets and for the London Metal Exchange. In Malaysia, a Government-owned holding company acquired control of the majority of the activities of the British companies in Malaysia.

66. In Thailand, as in Zaire, there exist joint ventures and mixed corporations in which the Government of the host country has substantial control. The situation is similar in Nigeria and in Rwanda. (e) The important role of transnational corporations in marketing and smelting operations.

67. In spite of this trend toward appropriation by the State, several trans-national corporations still play an important role at the level of processing and marketing. The table below illustrates the concentration of transnationals in the foundries, and the significant position of the Platino group should be noted. However, due to the fact that the facilities belonging to these concerns are located for the most part in developing countries, the governments of these countries have the upper hand in exercising increased control over the activities of foundries though they do not own them. In addition, the host countries benefit from the value added, even though the profits derived from the foundry are transferred abroad.

Table 15. Concentration of tin smelting companies in 1976

Corporation	Capacity in thousands of tons	Percentage	Cumulative percentage
PLATINO IV (Australia) Brazil, Malaysia, Nigeria	39 500	29.6	29.6
OVERSEAS CHINESE BANKING GROUP (Malaysia)	40 000	17.1	46.7
SHELL BILLITON (Thailand)	25 000	10.7	57.4
P.T. TIMAH (Indonesian Govt.)	26 000	11.1	68.5
RIOTINTO ZINC (Copper G.B.)	20 000	8.5	77.0
COMIBOL (Bolivia)	14 000	6.0	83.0
GULF CHEMICALS (USA)	9 000	3.8	86.8
METALLURGIE HOBOKEN OVERPELT (Belgium)	5 000	2.1	88.9

3. Tin market prospects

(a) Pattern of changes in consumption

(i) Short and medium term

68. The prospects of the market for tin produced by developing countries can be deemed good, if one bases oneself on the projections of the World Bank and on the analyses of other markets. According to recent World Bank estimates, tin consumption should increase 1.5 per cent yearly during the period up to 1985. The same estimates forecast an approximate 1 per cent rise in price, in net terms, over the same period (price based on the high 1976-1977 level). In contrast to the world prices of other metals, the price of tin climbed during the second half of 1981.

(ii) Long term

69. Long-range analyses, however, point a somewhat pessimistic picture for the producer countries, unless certain measures are taken. Indeed, a comparison between production and consumption shows a positive balance in favour of production.

Evolution of production in metric tons

1972	1975	1980*
196 400	179 700	200 700

* Mine production.

70. The drop in production between 1972 and 1975 was due chiefly to the increase in costs following the oil crisis. An increase in production was the answer to increased prices. Indonesia and Thailand provided additional production greater than the reductions effected by other producing countries.

Evolution of consumption in metric tons

1972	1975	1977-1979	1980
214 200	173 900	180 000	177 400

71. The causes of the decline in consumption can be summarized as follows:
(a) The recycling of tin is practiced less and less. For the 1979 period, in fact, recycled tin represented less than 2 per cent of the world's tin production. For 1980, 30 per cent of aluminium beverage cans were produced by recycling aluminium, and it is hoped that this figure will reach 50 per cent or more by about 1985, whereas for tinplate the recycling of cans was lower than 1 per cent.
(b) the use of tinplate, the principal use of tin, has declined 10 per cent in the USA, and the production of cans has dropped 23 per cent in favour of aluminium. This tin consumption trend threatens to pose serious problems for tin producers in the long run, due to a lack of vertical integration. In contrast to this, aluminium is produced by large companies (powerful transnational corporations) capable of taking on total integration.

(b) Evolution of prices

72. The price of tin rose during the second quarter of 1981. From 1975 to 1979 the selling price doubled, with a mean of M$ 32.43 per kg. (Malaysian dollars). From 1973 to 1980, the price trebled. One of the factors underlying the tripling of prices was the discontinuance, at the end of 1978, of G.S.A. sales, which had totalled 145 000 tons of tin metal from 1962 to 1975.

3. Procurement and price fixing

1. Procurement

73. The procurement of metallic tin or concentrates takes place along two distinct lines: procurement at the source and procurement on the organized markets.

(a) Procurement at the source

74. The major tin consumers supply themselves directly either from the producers, under agreements, or at the outlets from the Penang foundries, in accordance with the original daily-auctioning system. Medium sized concerns frequently operate through brokers and dealers.

(b) Procurement on the organized markets

75. The organized markets for tin revolve about three major centres: the London market, or L.M.E., the American stock exchanges, and the Penang market. Each market has its own characteristics and specific features. We shall briefly run through these different organizations, dwelling in somewhat greater length on the L.M.E.

2. London Metal Exchange (L.M.E.)

76. In London there exists an extremely active exchange for non-ferrous metals, the London Metal Exchange, or L.M.E. Activity on this exchange involves hedging far more than physical metal. It is one of the paradoxes of the non-ferrous metal market, for it is a marginal market that is sensitive to local influences that are highly speculative. However, it serves as a price standard for commercial transactions involving physical metal.

(a) Origin of the L.M.E.

77. This market came into being following the industrial take-off of Europe. This take-off was in fact accompanied by a sharp rise in metal requirements, while local production became insufficient. The concomitance of needs and shortage led to the search for, followed by the discovery of, large ore deposits located throughout the colonial empires. Intensive mining followed, in order to feed Europe's nascent industries. These new overseas activities sped up the development of international trade, with the support of maritime transport, without which this trade would have been meaningless. This development took place to the advantage of certain markets and certain cities that enjoyed particularly favourable circumstances. This was especially the case of London, and the reasons are threefold:

(1) Owing to the fact that Great Britain had begun industrialization before other countries, it had a range of diversified industries. Supplying them required large quantities of mineral raw materials.

(2) The very extensive British Empire housed the largest deposits then worked, and the English groups already constituted powerful mining and finance companies.

(3) Great Britain also had the biggest oceangoing fleet in the world.

78. It was thus natural for London, the political and economic capital of the British Empire, to be the place best indicated for international trade. However, the irregularity of consignment arrivals affected the supplying of the market and was reflected in pronounced price fluctuations. With the improvement of communication means, traders were able to know in advance of the arrival of a load in England and negotiate the purchase of it while it was still on the sea. Forward sales protected them against the risk of a drop in prices. Customers, for their part, could schedule their procurements in advance and avoid the risk of a rise in prices.

79. In order to facilitate their transactions, the merchants founded the London Metal Exchange Company in 1876. The definition of precise rules of exchange and the institute of daily price quotation sessions organized on a strict basis enabled the London Metal Exchange rapidly to impose its authority for the determination of the representative prices of the basic metals: first of all copper and tin, then lead and zinc after 1920, and finally silver in 1968 and now gold.

(b) Standardization of contracts

80. The appearance of a permanent market on which one was guaranteed that every forward trading operation would result in the actual delivery or receipt of a given volume of metal of a specified grade resulted from the standardization of the contracts concluded on the exchange. This standardization involved four points:

(1) For each metal, futures transactions were concentrated on a single form defined by its grade and its purity.

(2) A maximum term of three months was fixed for quotations (this was the time needed for transporting copper to England from Chile via Cape Horn, or tin from Malaysia via the Cape of Good Hope).

(3) Transactions had to involve uniform lots (25 tons for copper, lead and zinc, 5 tons for tin, and 1 000 ounces troy for silver).

(4) The metal necessarily had to be delivered to a warehouse approved by the Exchange (initially, the approved warehouses were all located within the United Kingdom, but the L.M.E. now has Customs-free warehouses in Europe).

(c) The practice of hedging

81. While forward trading may have reduced the drawbacks inherent in price fluctuations, it brought only a partial solution. Thus, a trader who bought metal for future delivery always ran the risk of sustaining a potential loss in the event that the spot rate prevailing at the time when he received the metal was definitely lower than the forward rate that he paid; he was at a disadvantage, in particular, with respect to his competitors who bought at that time. Conversely, a trader who had sold forward lost a potential profit if the spot rate at the time of delivery of the metal was higher than the forward price that he received. Furthermore, anyone who possessed stocks ran a high risk of loss of capital on the value of the stocks in the event of a drop in the price of metal.

82. In order to protect themselves against these risks, operators had recourse to a form of hedge more elaborate than mere forward selling or buying. Hedging generally consists in combining a forward physical transaction with a transaction in the opposite direction so that future inflows and outflows of metal will offset one another. In certain cases, hedging totally eliminates the price risk, just as it eliminates, cancels or reduces profit. The aim is to eliminate any risk of loss.

83. When a contract for future delivery is entered into, however, a low volume of trading does not always enable an operator desirous of covering himself to find a counterpart to his purchase or his sale for an equivalent period and quantity. The stepping-in of speculators remedied this market tightness to some extent. These operators enter into transactions without any hedge with a view to deriving profit from price fluctuations which they anticipate. They run the risk that their forecasts may not come true, and are totally responsible for the risk of losses due to price fluctuations.

3. Commodity exchanges in the United States

84. In the United States, non-ferrous metal exchanges developed only at a later date. The New York Commodity Exchange (Comex), which trades in silver, copper, mercury and gold, as well as in tin, was not created until 1920. The volume of physical transactions is definitely lower than that of the L.M.E. Comex quotes several delivery times, up to a maximum of fourteen months, but the specified date of delivery must fall in certain months. The organization of the American commodity exchanges constitutes a slightly different system from that of the L.M.E., though it is designed to fulfil the same objectives: namely, to facilitate trade and provide diversified hedging possibilities at all time.

85. The operations can involve three types of contract:

(i) spot contracts (cash contracts), which imply immediate delivery of the metal;

(ii) forward contracts, which result in the delivery of the metal at a specified future date;

(iii) futures contracts, which a priori also imply delivery at a specified future date, but under which the commitment can be transferred from one operator to another.

86. Transactions involving spot cash or forward contracts take place on the spot (or physical, or cash) market, whereas operations relating to futures contracts are handled on the futures market; the two markets are distinct. The futures contract basically corresponds to the forward contract of the L.M.E.

4. The Penang (Pinang) market

87. In Malaysia there exists a spot market for tin. On this market, only cash transactions take place. It is the only tin market in the world on which trading is done in physical volumes and not in the form of purchases on paper. The prices fixed serve as a standard throughout the entire world, except in Europe, where the London Metal Exchange constitutes the standard.

5. Metal quotations

(a) On the L.M.E.

88. Trading on exchanges is conducted in accordance with very strict rules. On the L.M.E. trading is done by auction, during two five-minute periods or rings per metal; the official quotation is the last price cried out at the end of the second period. In fact, four quotations are published: buyer and seller prices for both spot and three-month delivery. Another characteristic of this exchange is the small number of persons participating in sessions. Indeed, the members of the L.M.E. are divided into two categories:

(1) The ring dealer members, numbering about thirty, are trading and brokerage establishments covering a broad financial area and doing a large volume of trading; they have a monopoly on operations on the trading floor. The contracts traded in on the L.M.E. are principal to principal: i.e., every transaction on the exchange is concluded between two ring dealer members who pledge their own financially very solid liability. This system, combined with small deposits required from clients on operations undertaken, makes it possible to reduce the cost of futures trading.

(2) The other members, of whom there are approximately one hundred, have an observer and can place orders during sessions through the intermediary of a member of the ring. The vast majority of operators do not have access to exchange trading sessions and consequently can trade only through their brokers; the latter must turn to a member of the ring in the event that they themselves do not belong to it.

(b) On Comex

89. Comex, like many other exchanges, has a clearing house in which buying and selling are cleared each day. Furthermore, every forward transaction requires that a deposit be put up, representing a percentage of the amount of the operation.

CHAPTER III

THE ACTION OF THE TRANSNATIONAL CORPORATIONS ON THE MECHANISM OF PRICE CONTROL

90. A peculiar feature of the tin market is the absence of any given group in the fixing of prices. This is not the case with other basic metals. Two factors account for this: the very history of the market for this commodity and its geographic distribution. Well before the second world war, in fact, tin producers felt the need to band together in an association in order to defend their interests, and after the war the major tin-producing facilities were nationalized.

91. For the most part it is developing countries, through their government-owned corporations, that account for the bulk of the world's production. The association of these countries in an international forum in which certain consumer countries take part made it possible to establish procedures for exporting the product and fixing prices acceptable to all, by mutual consent.

92. This structure put an end to the speculative game of the large transnational corporations in the field of tin. The play in which they can still indulge is that of the commodity exchange. Their freedom in this process, however, is limited by the manoeuvres of the International Tin Council..

93. As already mentioned, tin is at present the only non-ferrous metal on which there has been a policy of stabilization under international agreements. This international accord constitutes a sort of international convention having the value of a treaty, the purpose of which is to steady the market, to adjust production to consumption, and to stabilize prices.

A. Theoretical aspects of market stabilization

1. The principle of stabilization of an international metal market

94. The goal of medium-term stabilization of the international market of a metal, which is actually tantamount to the elimination of sharp price fluctuations over a period of years, raises two problems:

(i) There must exist an international price standard, the medium-term evolution of which is a faithful reflection of the production/consumption ratio. Such a price should serve as a standard for establishing the rates on international trading in the metal. In the case of basic metals, the London Metal Exchange price quotations met these criteria.

(ii) Stabilization of prices cannot be considered an end in itself; sound, effective regulation of the market has to operate at the level of the tailoring of production to consumption. Regulation thus assumes a continual balance between the two: i.e., the elimination of phases of overproduction and phases of short-age; but these are engendered by phenomena unrelated to the international metal market, which run up against the rigidity of production. Hence the difficulty of totally eliminating the succession of periods of overproduction and shortage through regulation.

2. The means of an international market stabilization policy

95. A stabilization policy must cover two aspects: the preventive aspect and the therapeutic aspect. It must come into play whenever imbalances to be fought appear. During a phase of overproduction, measures must be instituted during the course of the process of decline. An initial means consists in restrictions on exportation or production. A second means consists in soaking up surpluses by buying up the metal (on the commodity market and also directly from producers) and storing it until the overproduction has been absorbed. In order for this system to be effective, these measures would have to be implemented very quickly, and this poses problems of financing purchases and subsequent liquidation of stocks.

96. Full effectiveness of these measures involves a twofold effect: on the one hand, direct reduction of the gap between the metal supply and demand; on the other hand, reorientation of operator expectations and the triggering of a cumulative process of rise that to some extent imparts a new impetus to the demand and cuts back the supply, thus reinforcing the direct effect of these measures.

97. During a period of scarcity, stabilization measures are geared toward increasing supply and keeping down demand. Swelling of the supply cannot arise from increased production, since capacities are fully used. Hence, one solution contemplated is to maintain on a permanent basis a surplus production capacity, the idle portion of which could readily be put to use in the event of an acceleration of the demand. This solution runs up against two obstacles: it is anti-economic for the producer, whose overhead charges would increase heavily; furthermore, the producer countries often have large-scale problems of economic development and mobilize all their resources in order to solve them. Consequently, even with an equalization of charges between producers and consumers, this solution is quite likely to be unfavourable to them. What is more, the situation of scarcity that increases their export revenues is advantageous to them.

98. An increase in supply can thus only stem from the sale of stocks previously built up, as, for example, during a phase of overproduction: this is the principle of the buffer stock. Under favourable conditions, metal sales on the commodity market have a two-fold effect: they narrow the gap between supply and demand and trigger a cumulative process of decline (or slow down the process of increase), thus strengthening the regulatory action.

99. The prerequisites for the efficacy of a policy of stabilization of a metal market are: agreement on a common strategy (among members) and control over the major portion of the international market for the metal. From the practical standpoint, stabilization raises several problems, the answers to which depend, in particular, on good statistical knowledge of the metal market:

(i) the distribution of the costs of stabilization measures, and in particular the financing of the buffer stock;

(ii) the determination of the amount of such financing;

(iii) the definition and allocation of production and export quotas;

(iv) the determination of the price levels below or above which action must be taken.

B. The stabilization of the tin market or the role of the International Tin Council

1. The history of the international tin agreements

100. The history of the attempts to stabilize the international tin market unfolded in three phases:

Phase 1 This is the phase of the private agreement of the Bandoeng Pool. As early as 1921 the Federated Malay States and the Netherlands Indies had come to an agreement on reacting against a price slump and a situation of overproduction.

Phase 2 This was dominated by the inter-governmental accord reached in 1931 following the creation of the Tin Producers' Association in 1929-1930. This agreement was renewed in 1934, in 1937 and in 1942.

101. The States came to an understanding for the setting-up of an International Tin Committee whose action legally came to an end in 1946, whereas in actual practice it had ceased to exist as of 1939. During its existence, the Committee had to face the crisis of the nineteen-thirties and the period of overproduction following 1936. In an endeavour to stabilize prices, the Committee resorted to two important measures: (a) Restrictions on production (the quotas allotted to each country ranged from 49 per cent to 35 per cent in 1938). (b) Buffer stocks. Their function was to absorb or soak up excesses. They did so on three occasions. The 1937 accord added a third measure to the existing provisions. Its objective was in fact to regulate production and exports so as to tailor production to consumption, to prevent rapid, severe price fluctuations, and to maintain reasonable stocks.

Phase 3 The third stage, which began in 1946, brought with it an additional dimension: Whereas previously everything took place among producers, it was thought in this stage that consumers could be brought into the process. The International Tin Study Group was then created.

102. This Group had now power to coerce, but it was in charge of preparing the statistics on production and consumption, and in this capacity it made recommendations to the governments. As early as 1948 this Study Group was to prepare an international commodity agreement of the type defined in Havana. The idea met with American opposition. This opposition lay at the base of the failure of the 1st Geneva Conference in 1950.

103. Notwithstanding this failure, in 1953 the Group established an International Tin Agreement. It did not take effect, however, until 1 July 1956. Since that time agreements have been reached every five years (1956 - 1961 - 1966 - 1971 - 1976 - 1981). These accords are governed by the International Tin Council (ITC). This third phase has been characterized by an ever-growing number of participating countries, and this has led to broader control over production and world consumption. With the 5th Agreement, more than 90 per cent of consumption (through the joining of the United States) is controlled by the International Tin Council.

2. Objectives of the Tin Agreements

104. The aims of these different accords have evolved with the situation of the moment. The first agreement was signed at a point when there existed considerable surplus production owing to the cessation of American strategic buying. Price stability was a secondary aim. American strategic buying had in fact led to sizeable investments giving rise to large production capacities. When the purchases stopped, these became surplus capacities. This first agreement set up export restrictions for long periods.

105. The second agreement was signed at the point when these restrictive measures threatened to create a situation of underproduction, on the one hand, and on the other, there existed uncertainty as to whether the Americans might now put part of their strategic stock, which had become surplus, back on the market. The third agreement came a year after the creation of UNCTAD. Among its objectives one already finds the conciliation of the concerns of the producer States, whose development is tied up with export revenue, and those of the consumers, desirous of having a regular supply at so-called equitable prices. It was at the time of this agreement that the liquidation of non-commercial stocks was contemplated for the first time. In the short term, the agreement stressed price stability, and in the long term, expansion of markets and a balance between production and consumption.

106. One of the goals was to increase the resources of the producer countries and to speed up their economic growth and their social development. It was then that the notions of remunerative receipts for producers and adequate supplies for consumers at fair prices made their appearance. The fourth accord, which differed little from the third in its aims, placed the buffer stock in its normal perspective. Here it played its true role of regulation that must precede export restriction measures, whereas these constituted nearly the sole preoccupation of the first agreement.

107. The fifth agreement formulated the principle of reconcilation between the interests of producer countries and consumer countries in a somewhat different manner. In it the stress was placed on:

(a) increased efficiency in the use of tin so as to aid in conserving world resources;

(b) local processing, the promotion of more effective methods, the development of markets in the producing countries and their role in marketing.

108. In short, the practical problem that determined the policy carried on through the different agreements remained fundamentally the same: to close, in so far as possible, the gaps between production and consumption so as to attenuate medium-term price fluctuations. The sixth agreement started in turbulence, with Bolivia questioning the floor prices set by the Council. Only with considerable difficulty did the agreement manage to reconcile the different partners. The sixth agreement went into effect on 1 July 1982 for a five-year period, with the possibility of an extension for an additional two years. It calls for a total buffer stock of 39 600 tons of tin as well as controls on exportation, as mechanisms for stabilizing the price of the metal within a range of intervention that might be modified on the basis of medium-term price trends.

109. This agreement did not enjoy the same unanimity that the fifth did. Thus Bolivia, one of the principal producers, has not yet signed the agreement, nor has the United States of America, a big consumer. The important fact during this sixth-agreement period is the attempt to create an Association of Producing Countries; but the project seems to be off to a bad start, owing to the significant differences of opinion between the two main interested parties, Malaysia and Indonesia. These two countries, along with Thailand, were to prepare a proposed Tin Association and submit the draft to the fourth ministerial meeting of producer countries in Lagos on 29 November 1982. Any joint project is now out of the question. On the contrary, Malaysia and Indonesia each had to submit their own versions of the way in which they viewed the structuring of such an association. Malaysia would like the tin-producing countries to group together so as to dispose of the necessary financial resources for carrying out buffer-stock operations and for setting up export controls.

110. Indonesia, for its part, feels that that is the role of the sixth International Tin Agreement. The divergencies between the two countries further relate to the manner of exercising the right to vote within the producing country group. Another point to which attention should be called is the attitude of the International Monetary Fund toward the sixth agreement. The Fun ruled that its available funds for financing buffer stocks could be used to assist the member countries in paying for their compulsory contributions to the buffer stock.

111. The Fund's disposable moneys for the financing of buffer stocks (it also covers products other than tin) were made available in 1969 and can provide part of the payments toward which the member countries of international agreements having buffer stocks are required to contribute, in accordance with terms and conditions determined by the Fund and subject to a certain number of established criteria. Drawings may be made in an amount corresponding to 50 per cent of the maximum contribution of the member country. Whenever such a country makes use of the Fund's disposable resources, it undertakes to cooperate with the Fund in seeking solutions to its balance-of-payments difficulties.

112. Since the disposable funds for the financing of buffer stocks were made available, the International Monetary Fund has provided its assistance to the member countries of the fourth and fifth International Tin Agreements (1971-1975 and 1976-1982). The sixth agreement calls for the maintaining of restrictions throughout 1983. These restrictions presently represent 36 per cent of the normal export amount. It hopes in this way to sustain the price which, for the end of 1982, is in the neighbourhood of £ 7 400 (sterling) per ton, or over US$ 14 000.

3. The mechanism of the Tin Agreements

113. The agreements are governed by the International Tin Council. This is an equal-membership agency both of whose sides, producers and consumers, have equal powers. It convenes periodically in order to examine the situation in the light of the statistics with a view to taking the necessary measures for implementing the policy of stabilization. Decisions are adopted not by vote, but by consensus. In order to achieve the stabilization of the tin market, the Council makes use of the following instruments: ceiling and floor prices; buffer stock; and export control.

(a) Prices

114. The Council establishes a price scale divided into three sectors. The floor price and the ceiling price are determined in such a way as to mark off the level that is supposed to insure long-term equilibrium between production and consumption; this level corresponds to the price trend. Inasmuch as the latter is the result of the development of production costs and monetary erosion, floor and ceiling prices have to be adjusted periodically, though this adjustment is not done automatically by indexing. It should be pointed out that in all the agreements the adjustments have been upward ones. The floor price is one that guarantees minimum receipts for producers and security for investors.

(b) The buffer stock

115. The International Council has constituted a stock that enables it to intervene on the market in either direction in order to check imbalances that are detrimental to the Council partners. The role of a buffer stock should be to correct short and medium-term straying movements. In actual practice, the stock reacts as follows: If the standard price drops into the lower reaches, i.e., toward the floor price, but without attaining it, the stock Manager may operate, provided that he has a net buying position. If the reference price reaches the floor price, the Manager must buy. If the standard price climbs into the upper reaches, but does not attain the ceiling price, the Manager may operate, provided that he is a net buyer. In the event that the standard price hits the ceiling, the Manager must buy. If the reference price fluctuates within the middle reaches, the Manager may not operate unless he is authorized to do so by the Council.

- Stock volume

116. This volume was set at 25 000 tons in the first agreement, but was cut back to 20 000 tons in the subsequent ones. This volume amounts to more than a month's consumption. At times this quantity is inadequate, but the Council can resort to borrowing, giving warrants as a guaranty. Yet the problem of financing hampers the Council in its manoeuvres in this area.

- Stock financing

117. The financing of the buffer stock is borne by the producers, with voluntary contributions on the part of the consumer countries. Nevertheless, the fifth agreement set a non-compulsory contribution goal for the consumers, equalling the charges borne by the producers. The consumers have always refused to accept the obligation to contribute toward stock charges. This attitude introduces an element of dissymmetry into the system.

(c) Controlling of exports

118. Restrictions on exporting constitute the ultimate measures to which the Council resorts when the stock action remains ineffectual. These measures are difficult for the producers to withstand, so that the Council has resource to them only in certain extreme cases. On the whole, the producers alone have to bear the rigorous aspects of the mechanism of stabilization.

3. An overall assessment of the Agreements

119. The different accords have made it possible to bring together in a single association over 90 per cent of production and nearly 90 per cent of consumption. Included among the consumers are France, the German Federal Republic, Japan (world's second largest consumer), and, since the fifth agreement, the United States, after long resistance, despite the growing interest manifested. The USSR has been present since the fourth agreement, but with a special status connected with its refusal to provide internal statistics or information on future estimates. This is already a remarkable degree of success. Added to this are the diplomatic successes achieved at the time of the first agreement. The Council actually managed to obtain restrictions on Soviet exports that were banging the market. It has also obtained moderation on the part of the USA, and at times the suspension of sales of strategic stocks. And in this way a modus vivendi has become established.

120. As relates to action on the market, the agreements have made it possible to bring about the conditions for the efficacy of a stabilization policy. The dissymmetry between the conditions under which intervention takes place when there is a cumulative downward trend in a situation of overproduction is quite clearly apparent. Buffer-stock buying backed up by export controls in times of marked overproduction (especially in 1958-1959) have made it possible constantly to maintain tin prices above the floor. But the stock was not capable of halting the exaggerated rising trends (beyond the ceiling price) that took place in 1961, 1964-65, 1966, and finally in 1973-74 and 1980. Checking these movements would have required very sizeable financial means, for the increases were engendered by psychotic phenomena of anticipation. Nevertheless, the International Tin Agreements have had a stabilizing effect, in the sense that the repercussions of the gaps between production and consumption on prices were attenuated, despite the consequences of the enormous strategic stock build-up of the United States or the Soviet sales in the nineteen-fifties.

121. An essential goal of the agreements is price stability and a suitable balance between production and consumption. No one would dispute the fact that the accords have resulted in a better tailoring of production to consumption. As far as price stability is concerned, it seems important to point out that an agreement which as a matter of principle maintains a sector free of any intervention, cannot pretend to achieve price stability in the short term; a study of the daily non-ferrous metal quotations on the L.M.E. shows that on a day-to-day basis tin is nearly as erratic as copper. However, a look at the monthly and yearly average price curves shows that since 1953 tin price fluctuations have exhibited a far less unsteady pattern than copper, lead or zinc. That is where one can see the effectiveness of product agreement on medium-term behaviour.

122. If one looks closely, one notes that the Tin Council lopped off all the troughs in the curve. As mentioned above, the Council's great success is to have constantly defended the floor price and to have managed to achieve this goal. An examination of the evolution of prices in real terms and not in current money, over a very long period, shows that:

(i) During the time between the two wars the oscillations of tin, synchronous with those of copper, lead and zinc, developed in line with a horizontal trend, whereas the latter three metals lost half of their buying power (more than a defense of stabilization, there was a defense of prices).

(ii) From 1953 to 1973 and real prices of the four metals were clearly above the prices between the two wars, but in the case of tin one notes that there was a plateau during the first ten years, and a higher level thereafter.

(iii) During the same period, rubber and sugar lost a large part of their real value, and wheat steadily dropped.

123. On the basis of these considerations one can conclude that, while the tin accords may not have guaranteed perfect price stability, price performances on the whole were higher than for the other non-ferrous metals quoted in London, and especially more so than agricultural products. It should be pointed out, however, that since the outset the measures to be taken in case of a shortage contained in the agreements have been purely formal. There are several reasons for this:

(i) the effective measures that one might imagine would involve distributing the available metal. Such measures would be an attach on the structures of liberal trade, as it is understood in the majority of the consumer countries, and these nations have never resolved in favour of them.

(ii) a larger buffer stock would make it easier to defend the ceiling, provided that the metal were accumulated while defending the floor. The financing of the stock has always been a bone of contention between consumers and producers. What is more, the fact that the Council would be able to buy up a very sizeable stock would spur increased development of mining capacities, and this would lead to overproduction that would become chronic.

CHAPTER IV

TRANSNATIONAL CORPORATIONS IN ZAIRE TIN INDUSTRY

A. Introduction

124. Tin exploitation in Zaire is carried on by joint ventures between the State of Zaire and foreign groups. The most important among these groups are Belgian, The French groups have projects that will materialize in the near future. The Belgian groups have been in existence in Zaire for a very long time, as a result of the colonization of Zaire, then the Congo, by Belgium. Among these groups, two are quite big: the Géomines group and the Empain group. France is represent d by the B.R.G.M. group (Bureau des recherches géologiques et minières). The history of the Belgian groups is tied up with the history of colonization and the movements toward economic independence that have marked the relations between Belgium and Zaire for over twerty years.

125. The French group bears the stamp of the opening of the Zairian economy toward the outside world other than Belgium. A trip through the pre-colonial period and the period following the annexation of the Congo to Belgium will provide an understanding of the origin of the charters of these companies.

B. The origin of the Belgian groups

1. Géomines

(a) The Charter

126. Corporate style: Compagnie géologique et minière des Ingénieurs et Industriels Belges. Géomines was founded in 1910 as a corporation existing under Belgian law with Belgian capital belonging to a group of geologists and industrialists from the Liège area in Belgium.

127. The company's aim was to gather information in Katanga on deposits of mineral substances of any and all natures, to have these deposits studied at their locations and take all action with a view to obtaining any and all research permits and mining concessions, and finally, to create any and all companies, whose memorandum and articles of association must be approved by the C.S.K. (Comité spécial du Katanga, which constituted the granting authority) and whose purpose was to work the mines discovered, sell their products, and carry out any operations ancillary to mining. Main office: Liège; Duration: 30 years; Authorized capital stock: 2 340 000 Belgian francs, divided among 78 shares each having a value of 30 000 Belgina francs. The realization of this goal necessitated sending to the Congo a group of geologists and prospectors who discovered the Kalémie coal field in 1911.

128. In 1913 they discovered the MANONO field, and mining followed in 1916 (initial production: 30 tons). At a distance of 117 km from Manono the Muanza deposit was reconnoitred. These two deposits constituted the Géomines concession at the time.

(b) Capital developments

129. By a resolution of the Extraordinary Shareholders' Meeting of 9/1/1923 the capital was raised from 12 to 16 million, through the creation of 16 000 new shares, each of a value of 250 F. In addition, 8 000 adv B shares were created and distributed to the CSK. This new 16 000-share issue was subscribed for by: Nagelmackers Fils & Co. Bank: 8 000 shares, or 3.2 million francs; and Joss Allard Bank: 8 000 shares (3.2 million francs).

130. These two financial groups undertook to offer the shareholders, at public sale and within two months, the right to subscribe for the new shares at the price of 400 F each and in the proportion of one new share to three old ones. When the capital increases decreed on 19/4/1920 were effected, 33 960 shares were created, distributed thus: - 17 960 shares were allocated as follows: 6 170 to Société minière congolaise pursuant to its agreements with Géomines and representing its share in the charges of the old stock as well as the benefits of its appreciation; 30 to Consulting Engineer and Mission Head Mr. Minette d'Oulhaye; 10 530 to the 14 040 old shares; 1 170 to the Board of Directors and the Technical Board; 24 000 B shares were delievered to the CSK. As a resolution of the Extraordinary Shareholders' Meeting held on 10/12/1929, the company's registered capital was raised from 16 to 200 million francs through the floating of 736 000 250-franc shares issued at 300 francs each. The same Meeting resolved to extend the duration of the company for an additional 30-year period.

131. This capital increase made it possible to step up activities in the field. The hydroelectric power plant was built in 1930 and provided current starting in 1933. With the advent of electricity, the facilities were mechanized (1935 - washing plants with jigs, trommel, power shovels). Maximum development was attained owing to the imperatives of the second world war of 1940-1945. The Congo participated in the war effort. It was during this period that the Manono electromechanical shops were developed in order to meet the needs for replacement parts that could not come from Europe during wartime.

132. In 1948 cassiterite production amounted to 5 000 tons. This was the highest figure that the company ever reached. The foundry was installed in 1937. It was equipped with electrical furnances. During this time the company was mining weathered pegmatites and laterites (soft ores not requiring any drilling). The year 1949 witnessed the beginning of erection of a 370-ton concentrator designed to process hard pegmatite. For reasons of a technical and economical order the concentrator was shut down in August 1956. Exploitation of the weathered and not-so-weathered part continued. For the latter, it was necessary to use drilling, undercutting and crushing methods.

(c) The new Géomines of 1950

133. In 1950 a new Géomines, a Congolese corporation having its headquarters at Manono, was created. Mining, ore processing and related operations. Subject to an extension agreement, the company was set up to last until 12 March 1990. Nominal capital of 200 million Congolese francs, represented by 300 000 shares having a face value of 250 francs, paid up in full. The CSK had the right to subscribe for a maximum of 20 per cent of any capital increase. Out of the company's net profit 5 per cent is deducted for the purpose of constituting a reserve fund. This deduction ceases to be compulsory once the fund reaches 10 per cent of the nominal capital. If possible, a maximum of 6 per cent by way of an optional bonus to employees.

134. Out of the profit surplus royalties are payable to the CSK (12 per cent of the profits if they are lower than 7 per cent of the authorized capital, 25 per cent between 10 and 15 per cent, 40 per cent between 15 and 35 per cent, 60 per cent beyond this, and 50 per cent only if what are involved are not diamond, gold or precious-stone deposits), and 7.5 per cent to the members of the Board of Directors except if the distributable profits are not in excess of 7 per cent of the capital, otherwise, Directors would be entitled only to the yearly 5 000-F fee; the balance went to the shares of stock.

(i) Amendments to the by-laws

135. At the Extraordinary Shareholders' Meeting held 6 June 1950, 400 000 B shares belonging to the CSK were eliminated. Independently of the right to vote attached to the shares of stock, the CSK continued to enjoy voting rights equal to one-third of the total number of votes that could be exercised at Shareholders' Meetings. However, there was a change in the distribution of profits. By a royal decree of 27 May 1952, the nominal capital was raised to 700 million Congolese francs through the floating of 500 000 new shares each for a par value of 1 000 francs. Subscription was as follows: 100 000 shares at Fr 1 000 - Fr 13 by way of costs by CSK. 280 000 shares by Société Générale of Belgium. 120 000 shares by Banque Nagelmackers Fils & Cie.

136. These shares were then offered to the stockholders at the same price. The 300 000 old shares (Fr 250 each) were also transformed into 200 000 shares for Fr 1 000 each, by exchanging four old shares for one 1 000-franc share, without any fractions being issued. In this way, the nominal capital of 700 million Congolese francs was represented by 700 000 shares of 1 000 Congolese francs each.

(ii) Géomines as a Belgian-law corporation

137. A few days prior to the independence of the Congo a law promulgated in Belgium turned Géomines into a company organized and existing under Belgian law. In order to meet this new situation, the Extraordinary Shareholders' Meeting of 20/12/1963 amended the company's by-laws in order to bring them into harmony with Belgian law. Actually, Belgium created two Géomines corporations. Thus the Congo subsequently lost all its rights in this corporation, while as granting authority it inherited all those acquired by the CSK. In the field, production had diminished to some extent (25 000 tons from the end of 1952 to 1959) as a result of the tight quota restrictions on tin required by the International Tin Council.

138. As a result of the social and political disorder that followed upon the Congo's independence, the activities of the company in the Congo were suspended from July 1960 to April 1961. One effect of these events was to give a momentary jolt to confidence in outside circles. Recovery had barely taken place, and with great difficulty, from these disturbances when others, subsequent to the Mulilist insurrection, occurred, preventing normal activities: personnel working at Manono had to be evacuated and there was great loss of matériel. In 1967, the revolt of the mercenaries created panic in the foreign circles at Manono; nevertheless, it was still possible to achieve a production of 2 700 tons.

(d) Interests held

139. Géomines had acquired interests in a number of mining companies and corporations created during the period when it carried on its activities in the Congo. Among them one might mention: Subscriptions in Syluma: it had subscribed for a capital of ± 5 million francs represented by 9 996 shares of stock; interests in Sogétain: Géomines' subscription was 5 000 shares, each for a value of 1 000 francs; interest in Société minière de Kamola (SOMIKA): it had subscribed for 1312 shares out of a total of 17 000, for 1 000 francs each, it also had participations in Société des charbons de la Lukuga, in Chimaplo, in Société financière et minière de la Lueta, and in Indumines.

(e) Creation of Congo Etain (Zairétain)

140. Under the Bakajika law of 1966, the State resumed in full its power as granting authority. Corporations that had existed prior to that date were compelled to refile applications for the permits held by them. As a result of the negotiations undertaken between the State of the Congo and Géomines, agreements were reached that led to the creation of the Congo Etain company, starting 1 January 1967; this company carried on with the activities of Géomines in Zaire. It is a mixed corporation in which the partners each hold 50 per cent of the shares, and it was created under Congolese law.

141. The share of the State was covered by the concession, while that of Géomines was constituted by the equipment and installations in place in 1967. It was in fact Géomines Congo that became the partner of the Congolese State. Under these agreements, Géomines took over the management of Congo Etain. When the country changed names, the Congo becoming Zaire, the Congo Etain company became Zairétain.

(f) Géomines throughout the world

142. Today Géomines' activities extend well beyond the frontiers of Zaire and Belgium:

(i) In Rwanda

In the area of tin, Géomines mines cassiterite and related metals in Rwanda, where it has created a mining company under the name GEO Rwanda. In Rwanda, as in Zaire, there were a swarm of small companies that exploited tin. In 1973, following a spectacular change in leadership, Géomines succeeded in uniting all these companies in a single corporation: Somirwa, a corporation in which Géomines holds 51 per cent and the State of Rwanda, 49 per cent. Somirwa is governed by a Board of Directors, the chairmanship of which is ensured by Géomines, while two managing directors represent Rwanda and Géomines, respectively. The entire mining industry in Rwanda is in the hands of Somirwa. Desirous of increasing the value-added, the State of Rwanda deemed it advisable to smelt the cassiterite locally, in order to export only tin metal.

143. Géomines detached itself from the State on this point: thus the foundry belongs to the State and works for Somirwa on a special-order basis. The foundry was designed for a yearly capacity of 3 000 tons, a volume that Somirwa does not manage to supply to it: hence the economic feasibility of the foundry is questionable. Furthermore, in Rwanda as in Zaire, placers are becoming depleted. Large amounts of capital are required for the purpose of carrying out geological studies and operating on the primary deposits. Géomines has been unable to get together the necessary funds, and has requested the Rwandese Government either to back the loans or to borrow on the market itself. The impasse has yet to be resolved, and Somirwa is doing poorly.

(ii) Elsewhere

Aside from Rwanda, Géomines is present in Portugal and in the United States (Géomines Incorporated), in Arizona. The authorized capital of Géomines, a Belgian corporation, is 200 million Belgian francs.

(g) Géomines prospects

144. Unlike many other mining groups, Géomines is not attached to any specific financial group, despite the presence of the Nagelmackers Bank among its shareholders. In Africa Géomines is confronted with a worrisome situation. The placers are running out in Zaire and in Rwanda alike. Nevertheless, within its concessions there exist primary deposits containing abundant and fairly rich reserves. Working these requires large amounts of capital, on the order of US$ 20 million. Géomines considers that it cannot come up with this sum by itself. It is demanding that its partners, and in the case in hand the Governments, guarantee these loans or make the required financial means available to it.

145. In Belgium Géomines possesses extensive assets. Consequently, it ought to enjoy credit readily in that country if it truly so wished. It explains its not obtaining the desired credit by hesitation on the part of financiers with respect to a project for exploiting the hard rock. This reticence, it says, is motivated by two reasons: Economically, the project is a difficult problem; the project is not totally mature, and the engineering is still incomplete. Géomines has nevertheless concluded in its studies of the project that under the present circumstances it is economically feasible. Otherwise it would not press the States in question to back bank loans. Unless exploitation of the hard rock takes place in the near future, Géomines activities in Africa will shortly come to an end.

146. As relates to the project for upgrading lithium carbonate, a mineral associated with pegmatite at Manono, Géomines executives have remained circumspect. The lithium market is very difficult. The Americans and the Canadians have a tight grip on it. The lithium carbonate market was saturated a few years ago, although aluminium metallurgy has enhanced the possibilities for utilizing it. Indeed, lithium carbonate has an attractive property: namely, that it reduces energy consumption, something that is not to be overlooked at a time like the present, when watchfulness is exercised in every direction with regard to energy savings.

147. In Africa, Géomines' current goals are: (a) to maintain and develop its activities in Zaire and in Rwanda in spite of the difficulties facing it in each of these countries; and (b) to develop a certain agricultural aspect. In the Manono region, this project has already timidly reached the realization phase.

2. From the eastern mining companies to Sominki

148. In order to understand the history of the mining companies in the East, it is necessary to go back to the creation of the Compagnie des chemins de fer du Congo supérieur aux Grands Lacs africains (C.F.L. - Upper-Congo-to-the-African-Great-Lakes Railways Company) and the founding of the Comité National de Kivu (CNK), both of which constituted granting authorities. We shall briefly run through the holders of concession-granting power at the time, and give an overview of the agreements subsequently entered into between these two organizations and the Congolese State (now Zaire).

(a) The Compagnie des chemins de fer du Congo Supérieur aux Grands Lacs Africains (CFL)

(i) Creation of the CFL

149. The origin of the company dates back to the beginning of the century, when E. Empain was entrusted by the Congo Free State (letter dated 7/10/1901) to found a company with an authorized capital of 25 million francs. This company was the future CF., which emerged from the 4 January 1902 agreement between the Congo Free State and the Compagnie belge des chemins de fer réunis. The CFL was thus created

in 1902. The aforementioned agreement defined its role in this way: The Congo Free State grants the CFL, for a period of 99 years starting 1 January 1902, the concession: (a) for a railway connecting the Congo downstream and upstream of Stanleyvill to Lake Edward; (b) for a railway connecting the Congo downstream and upstream of Nyangwe to Lake Tanganyika.

150. The State grants the company the use of all necessary land for the establishment of the track and its appurtenances. The State grants the company 4 million hectares of land and forests, to be designated by the State. This concession shall increase pari passu with the growth of the company's capital. The State authorizes the company to carry out mining exploration in the subsoil. In the event that mineral deposits are discovered, the State grants it a mining concession therefor, and such mining shall be carried on either by the company itself or by subsidiaries to be established.

151. If the company itself is the operator, one-half of the net profits made shall be turned over to the State. In the event that subsidiaries are created, one-half of the contributions and benefits shall be turned over to the State. Upon the expiry of the concession period, the State shall take possession of the railway and equipment. The company's capital is set at 25 million, represented by 100 000 shares of stock. There are further created 100 000 dividend shares, which shall be registered for a 25-year period. The capital shall be increased gradually as the lines are built.

152. One provision of the charter specifies that the Congo Free State shall have the right to take over the operation of the railway for its own account at any time, turning over to the company any operating profit during the remainder of the concession period, starting from the date of the take-over. During such period, however, the company shall maintain its share of profits on the exploitation of the land and mines.

(ii) Evolution of the CFL concession

153. King Leopold II's Congo Free State ceased to exist in 1908, the year in which the Congo was annexed to Belgium and became a Belgian colony. The colony took over the rights which the Congo Free State was formerly recognized as having. Significant amendments were made to the 4 January 1902 convention by the convention of 9/11/1912 signed with the Government of the Colony. The latter convention defined the mining legislation applicable in the area of the CLF company. This legislation flowed directly from that already applied in Katanga. By this convention the colony determined the limits of the CFL concession and defined the applicable legislation in this field with regard to mining exploration and exploitation.

(b) Société minière des Grands Lacs

154. Within the framework of the mining activities that the company had to carry on, it created the Société minière des Grands Lacs (Great Lakes Mining Company), known as MGL (Minière des Grands Lacs). For this company gold was the chief substance mined.

(c) Kivumines

155. In parallel with the Comité spécial du Katanga, the Congo, in a joint undertaking with CFL, created the Comité national du Kivu (CNKi). This Committee, a veritable granting authority, extended its activities into the fields of real estate, forestry and mining. Like CFL, it could either operate itself or make use of subsidiaries. It was bound by its obligations toward the Congo, as were any subsidiaries that it might create. As for the domain of mining, its concession was operated by its subsidiary by the name of Kivumines.

156. This subsidiary mined tin, gold and associated metals. The Comité national du Kivu subsequently acquired interests in a number of companies. The powers of the Comité spécial were amended by the convention of 25 May 1960. Indeed, after long and laborious negotiations the CNKi, the Belgian Congo Association and the Compagnie des chemins de fer du Congo Supérieur aux Grands Lacs Africains finally concluded the conventions of 25 May and 24 June 1960.

157. The tripartite convention of 25 May 1960 reflected the Colony's wish to withdraw the granting-authority rights from the Comité national du Kivu: i.e., the powers that had been delegated to the Comité national du Kivu to sell and grant lands, forests and mines belonging to the domain of the Belgian Congo in the Kivu region. At the same time, this convention released the Comité from the obligations attached to the capacity of granting authority or constituting the other side of it.

158. The Belgian law of 17 June 1960 granted corporations having activities in the Congo the freedom to choose the status under which they would exist after the Congo's Independence, which came about on 30 June 1960. They could become corporations under Belgian law or they could remain Congolese. The majority of them created two corporations: one Belgian one, make up of all the assets and equipment located in Belgium, and the other Congolese, constituted by all the assets and concessions established in the Congo.

159. The corporation under Belgian law was often presented as the technical-assistance and management branch of the Congolese corporation. The latter paid the former all the costs of assistance. Thus, Kivumines also had to make a choice: there was formed a Kivumines corporation in the Congo and another in Belgium.

(d) Cobelmin

160. The Comité national du Kivu and CFL granted concessions to Belgian financial groups desirous of carrying on activities in the field of mining. Among these groups one should mention the ambert group, which today constitutes the Bruxelles Lambert Bank, the Empain group, and other. These financial groups resorted to an agent for executing their plan: this was Cobelmin. This corporation was an engineering and mining company working for the account of the financial groups. Cobelmin worked a variety of mines. The principal production involved tin and related metals. Cobelmin subsequently had to absorb numerous other small cassiterite-mining companies, as a result of growing difficulties due to the more and more precarious situation that obtained in the region.

(e) Symétain

161. The Symétain (Syndicat des mines d'étain - tin mining syndicate) group came into being the same way that the other Kivu companies did. It began working mines in 1928 under the name Symaf (Syndicat minier africain - African mining syndicate). Symaf was established through the association of several groups, the most important of which were: Crédit civil du Congo, Cominière, Synkin, etc. In 1932 Symaf created Symétain and acquired shares of interest in other companies which have since vanished: Syluma and Symor. Symétain thus became the principal and in fact sole exploiter of tin and associated metals, derived from the former Symaf. Symaf gave rise to the following companies: Soliza, whose chief activiti s are petroleum exploration and exploitation on the Lower Zaire coast, Soliza (Société du Littoral du Zaire) works in association with Gulf Oil. It came into being in 1958. Cometra was created in 1948 and absorbed Soliza in 1962. Symétai gave rise to: Cométain, which in 1961 was Symétain's Belgian branch. This corporation was created within the general framework of the Belgian law of 17 June 1960. Symétain Zaire (1963) is Symétain as it was prior to 1960, but made up solely of concessions and equipment that remained in the Congo at that time. Until 1976, Symétain was still one of the most dynamic mining companies. The socio-political difficulties experienced by the mining region appreciably cut down its working capacity.

(f) The creation of Sominki

162. Operating difficulties and the steadily decreasing rate of profitability of all the eastern corporations led them, under the insistence of the Government of Zaire, to consolidate and form a single corporation, Sominki (Société minière et industrielle du Kivu - Kivu mining and industrial company). The Zairian branches thus united to create Sominki, constituted with the capitals of these companies and the contribution of the Zairian State, in the proportions mentioned above. Similarly, the Belgian branches consolidated in a single corporation, Cogémin, in which the State of Zaire is not represented. It is Cogémin that takes care of the management of Sominki. It also takes care of the marketing of its products. The activities of these groups extend into several industrial branches within Zaire as well as without.

C. The French group

163. The French made their entrance into Zaire via the French Mining Mission attached to the French Embassy. This mission did a remarkable job of documentation that made it possible to collect the information used by B.R.G.M. (Bureau des recherches géologiques et minières - Geological and mining research office) in order to get its bearings in the field. At the same time that it worked on a contractual basis for the Republic of Zaire, BRGM also undertook research on its own behalf, with the financing derived from the subsidy, and obtained first of all prospecting permits, and next concessions for the following substances: Tin, in the localities of Kania, Katondo and Kalimbi; Copper, at Dikulushi, Kopulo and Moba; and Zinc, at Kasolwa. With a view to exploiting these substances BRGM, represented by its mining development branch, created mining companies. As relates to tin, there are three:

1. SMDG (Société minière de Gome)

164. This company plans to mine cassiterite at Kalimbi and in Kivu. Production will involve a mean tonnage of 60 to 65 metric tons per year. The reserves are estimated at 200 tons of cassiterite. The average content is 1 to 2 per cent in the eluvia. There exists a primary deposit w ich it will take larger investments to mine. In connection with the investments already made, one should distingyish between investments for carrying out work (which amounted to Z 8 000 000 as of 31 December 1981) and investments in equipment and matériel (estimated at Z 350 000 at the end of 1980).

165. Manpower: The company employs 200 people, including 2 Zairian management-level employees. These are two prospectors who are attached to the chief of operations. As one can see, SMDG is a tiny corporation both in terms of its reserves and in terms of its financial capacity. These reserves permit the company a lifetime of barely three to four years, which is too little for a mining operation. Actually, SMDG was created only in order to enable BRGM to familiarize itself with the mining of this type of deposit in a particular Zairian environment.

2. SOMIKA (Société minière de Kania)

166. Somika is a mixed corporation in which the State of Saire holds 20 per cent of the capital by virtue of its rights as the granting authority. The other 80 per cent is held by Coframines, the branch of BRGM in charge of mining development. Somika was founded in February 1981.

(a) Financing

167. The enterprise is entirely financed by Coframines, and the investments scheduled for the development of the project were estimated at 60 million French francs in 1982. The Somika investment is provided in the following manner: 50 per cent by the Caisse Centrale de Coopération Economique (a French public agency); by the Zairian banks: Union Zairoise des Banques (UZB) and BIAZ, for a total of 8 000 000 zaires and another portion comes from the stockholders.

168. The Bank of Zaire unfroze the local credit of the Zairian banks. The interest rate charged by the Zairian banks is 15 per cent. The loan is for a duration of five years, with a one-year repayment deferment. Production will involve 800 tons of concentrates a year, or 500 tons of metal content. Production is scheduled to start up in 1983. Only placer deposits will be mined.

(b) Reserves

169. The estimated reserves represent 8 000 to 10 000 tons of concentrates, or ten years of exploitation at the anticipated rate.

(c) Personnel

170. The company employs 200 to 250 persons. Its social policy will be similar to that practiced in the region by other mining companies. Approximately 20 French management-level employees are anticipated during the period of normal operation.

(d) Marketing

171. The products of the mine will be marketed by the Choni Company of Paris. This company, which does not have a foundry, will simply resell the concentrates bought from Somika. The outlets will be Spain and the Netherlands - countries in which there exist foundries.

(e) Transportation of concentrates

172. The concentrates will be shipped by road as far as Kigali, and then by air to Paris. Sales take place FOB, Goma 1 border. Payment is made within ten days of shipment.

3. SOMIDO (Société minière de Katondo)

173. Somido will mine cassiterite in the area of Katondo, which is 100 km from Kania. The project will materialize only after the Kania project has been developed. The company includes the same number of stockholders as Somika, and also has the same amount of reserves. The aspects worth noting can be summarized in the following manner: The projects are modest, owing to the quantity of reserves detected; the investments are also modest and are even accessible to Zairian businessmen; the mining period will be fairly short, approximately 10 years.

174. These observations elicit a series of questions: Did the State of Zaire feel the need to call upon a foreign entrepreneur to mine these modest deposits, or did it find itself confronted with an initiative on the part of such an entrepreneur? In either case, considering the period of exploitability, why were these companies allowed into the category of companies with conventions? For convention companies are exempt from all taxes for a period of at least five years. What benefit can the Republic of Zaire derive from this, since, when the exemption period has elapsed, the company will have ceased to exist. Based on the modest nature of the investments, one can predict a rudimentary method of recovery and exploitation. The absence of any Zairian top management in this phase of the project deprives them of a valuable opportunity to take part in or to conduct the preparations for the birth of a small mining company using a technology that is within their reach. Could not the production of these three companies contribute toward feeding the Zairetain foundry, which is in search of concentrates, or if not, then that of neighbouring Rwanda, within a framework of regional integration? In what way can Zaire benefit from the marketing of cassiterite concentrates by a foreign corporation when it has an ore marketing company (Sozacom) that is already quite familiar with market manoeuvres?

CHAPTER V

CONCLUSION

175. The process of industrialization requires the conjunction of several factors, the most important of which are capital, the existence of the need to consume the products manufactured, the necessary infrastructure for the operation of the industries, i.e., the availability of electrical energy, highways or means of communication, water and operating raw materials, service companies such as banks, shipping and insurance companies, etc.... and finally no industry can exist.

176. The mining industry brought into Zaire the ideal framework for its industrialization. The receipts are immense, both in local currency and in foreign exchange. In order to realize their goals, the mining companies have created the indispensable infrastructure for industrial development. The mass of jobs engendered by the mines have given rise to large agglomerations, veritable consumer markets, communities of men participating in and having acquired collective industrial experience, bent upon the realization of a common task, imbued with the spirit of enterprise, accepting the rigours of discipline without flinching - in short, communities of a new type in which one finds, side by side, the assembly mechanic and the nurse, the geologist and the book-keeper, the computer specialist and the miner, the chemist and the psychologist, the electronics engineer and the agronomist.

177. The unfolding of mining activities has been, in Zaire, the result of the initiative of transnational corporations. This affirmation is even more valid in the case of the tin-mining companies. The geographic location of areas where the activities of these enterprises are carried on, areas remote from all the major administrative centres and totally enclaved within the interior of Zaire, makes these companies the only islands where any economic activity at all takes place. Sominki, Zairétain, the Entreprise minière du Zaire, and soon the Société minière de Kania Katondo, constitute virtually the only poles on which all the economic activities in that part of the country converge. Aside from the fact that they maintain more than three thousand kilometres of highway, they produce nearly all the electrical energy consumed in this region and account for more than 50 per cent of the circulating load on the river boats and air freight in this part of the Republic. The workers in these enterprises represent an important consumer market. It is the normal ultimate destination of the farm products of the peasants. These different aspects are the effects swept downstream from the development of mining activities. The effects can benefit the general economy of the Nation only if the mining industry itself is integrated into the general plan of development; otherwise, all these effects will vanish as the deposits are depleted. It is with regard to this consideration that the role of the State ought to be preponderant.

178. As for Zaire, negotiations for optimizing the beneficial effects of the mining industry have been conducted since the very birth of the Congo Free State. During the colonial era, interests were safeguarded by appropriate legislation enabling each sector to benefit, as is fitting, from the fruit of its efforts. As Independence approached, the colonizing nation, in which the majority of the

transnational corporations had originated, sought to hold for its nationals the bulk of the profit derived from mining operations in Zaire. Indeed, it constituted the only outlet for mining products extracted from Zaire, in this way insuring a reliable, regular, abundant and cheap supply, and it enabled the Belgian corporations, through clever playing with the rules of law, to have wide advantages. These corporations had in fact split themselves in two - into Belgian companies and Congolese companies.

179. This bipolar approach enabled them to hold all the factors of decision in the Zairian mining sector. As corporations existing under Belgian law, they were the managers of the corporations existing under Congolese law. It was they that designed the mining programme, carried out the technical studies, took care of the recruiting of technicians (often at the expense of Zairian technicians), applied to banks for necessary funds, purchased equipment, and took charge of marketing; whereas the corporations existing under Congolese law, being directed by Belgian nationals recruited and appointed by the counterpart corporations existing under Belgian law, did nothing more than simply follow the already established programme. They were or are all on the brink of bankruptcy. They display chronic deficits. Through these machinations, they manage to obtain exemptions from all taxes and duties. Following long and arduous negotiations, the State of Zaire has succeeded in obtaining, on paper, the right of examination and a share in the decisions affecting the fate of the corporation.

180. It remains to be pointed out that in 1982, in the different corporations, there was not a single Zairian in a management post in the area of technical and financial management. And yet the Republic of Zaire has been training engineers since 1954, and the various financial institutions operating within the country are completely run by Zairians. This attitude of renunciation is detrimental to the interests of that country, for it is depriving itself of the opportunity to strengthen its technical skills for the future autonomous management of its enterprises in the mining sector and to gather the essential data and information for integrating this industry into the general development plan.

BIBLIOGRAPHY

1. Annual Reports of the Zairétain Company.
2. Annual Reports of the Sominki Company.
3. Annual Reports of the Department of Mines.
4. Metal Bulletin, 1982.
5. Pierre Légoux: International Tin Council.
6. Industrie minière et développement du Tiers-Monde, by A. Kalonj Kelengula, Ecole des Mines de Paris.
7. Economie des matières premières: Edition Economica.